

5390-5469

SUPERIOR COURT OF THE STATE OF CALIFORNIA  
FOR THE COUNTY OF LOS ANGELES  
DEPARTMENT 308 HON. CHARLES W. MC COY, JUDGE  
RICHARD BOEKEN, )

)  
PLAINTIFF, )

)  
VS. ) SUPERIOR COURT  
) CASE NO. BC 226593  
PHILIP MORRIS, INCORPORATED, )  
A CORPORATION; INTERNATIONAL HOUSE )  
OF PANCAKES, INCORPORATED, A )  
CORPORATION, )

)  
DEFENDANTS. )

)  
REPORTER'S DAILY TRANSCRIPT OF PROCEEDINGS  
FRIDAY, MAY 11, 2001  
P.M. SESSION  
VOLUME 33B

PAGES 5390 THROUGH 5469, INCLUSIVE  
APPEARANCES:

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OFFICIAL REPORTER

I N D E X

FRIDAY, MAY 11, 2001..... 2:5390:3

1:45 P.M..... 2:5390:7

WITNESS

JERRY WHIDBY

DIRECT EXAMINATION BY MR. LEITER..... 2:5391:10

EXHIBITS

I.D. 11095 - DEMONSTRATIVE..... 2:5410:5

I.D. 11096 - DEMONSTRATIVE..... 2:5412:8

I.D. 11097 - DEMONSTRATIVE..... 2:5418:11

I.D. 11098 - DEMONSTRATIVE..... 2:5422:14

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I.D. 11100 - DEMONSTRATIVE..... 2:5426:18

I.D. 11101 - DEMONSTRATIVE..... 2:5453:6

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I.D. 11103 - DEMONSTRATIVE..... 2:5459:22

5390

1 CASE NUMBER: BC 226593

2 CASE NAME: BOEKEN V. PHILIP MORRIS

3 LOS ANGELES, CALIFORNIA FRIDAY, MAY 11, 2001

4 DEPARTMENT 308 HON. CHARLES W. MC COY, JUDGE

5 APPEARANCES: (AS NOTED ON TITLE PAGE.)

6 REPORTER: LINDA STALEY, CSR NO. 3359, RMR, CRR

7 TIME: 1:45 P.M.

8

9 - - O - -

10

11 THE COURT: THANK YOU, MA'AM.

12 GOOD AFTERNOON, LADIES AND GENTLEMEN.

13

14 (CHORUS OF GOOD AFTERNOON'S.)

15

16 THE COURT: ALL RIGHT. OUR JURY IS PRESENT; COUNSEL

17 ARE PRESENT AS WELL.

18 MR. LEITER.

19 MR. LEITER: THANK YOU, YOUR HONOR.

20 PHILIP MORRIS CALLS JERRY WHIDBY.

21 THE COURT: PLEASE.

22 SIR, IF YOU WOULD PLEASE STEP OVER HERE.

23 FACE MY CLERK RIGHT HERE, AND RAISE YOUR RIGHT

24 HAND TO BE SWORN IN THIS MATTER.

25

26 JERRY WHIDBY,

27 CALLED AS A WITNESS BY THE DEFENDANTS, HAVING BEEN FIRST DULY

28 SWORN, TESTIFIED AS FOLLOWS:

5391

1

2 THE CLERK: HAVE A SEAT.

3 AND SIR, FOR OUR RECORD, IF YOU'LL STATE YOUR

4 FIRST AND LAST NAMES AND SPELL THEM, PLEASE.

5 THE WITNESS: MY NAME IS JERRY WHIDBY, W-H-I-D-B-Y.

6 MR. LEITER: GOOD AFTERNOON, EVERYBODY.

7

8 (CHORUS OF GOOD AFTERNOON'S.)

9

10 DIRECT EXAMINATION

11 BY MR. LEITER:

12 Q. GOOD AFTERNOON, DR. WHIDBY.

13 A. GOOD AFTERNOON, SIR.

14 Q. DR. WHIDBY, WHERE DO YOU LIVE?

15 A. I LIVE IN [DELETED].

16 Q. WHERE IS [DELETED]?

17 A. [DELETED] IS A VERY SMALL, LITTLE TOWN

18 ABOUT 65 MILES EAST OF [DELETED].

19 Q. AND --

20 A. THAT'S SOUTH OF [DELETED], ABOUT

21 100 MILES, [DELETED] IS.

22 Q. FARM COUNTRY?

23 A. FARM AND FISHING, YES.

24 Q. WHAT'S YOUR CURRENT RELATIONSHIP WITH

25 PHILIP MORRIS?

26 A. I'M A CONSULTANT TO PHILIP MORRIS.

27 Q. AND HOW LONG HAVE YOU BEEN A CONSULTANT?

28 A. SINCE I RETIRED IN 1998.

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1 Q. YOU RETIRED FROM -- BEFORE 1998, YOU HAD BEEN A

2 FULL-TIME EMPLOYEE OF PHILIP MORRIS?

3 A. YES, I HAD.

4 Q. AND HOW LONG HAD YOU WORKED AT PHILIP MORRIS

5 BEFORE YOUR RETIREMENT IN 1998?

6 A. I WENT TO WORK FOR PHILIP MORRIS IN 1972 AND

7 WORKED UNTIL 1998. SO THAT'S ABOUT 26 YEARS, I GUESS.

8 Q. AND IN WHAT DEPARTMENT DID YOU WORK DURING YOUR

9 26 YEARS AT PHILIP MORRIS?

10 A. IN THE RESEARCH AND DEVELOPMENT DEPARTMENT.

11 Q. AND WE'LL TALK ABOUT THIS IN MORE DETAIL, BUT

12 GENERALLY, WHAT IS THE RESEARCH AND DEVELOPMENT DEPARTMENT AT

13 PHILIP MORRIS?

14 A. THE RESEARCH AND DEVELOPMENT DEPARTMENT IS THE  
15 DEPARTMENT THAT IS CHARGED WITH MAKING IMPROVED PRODUCT,  
16 MAKING IMPROVED CIGARETTES.  
17 Q. NOW, EARLIER IN THE TRIAL, DR. CARCHMAN  
18 TESTIFIED.  
19 YOU KNOW DR. CARCHMAN, OF COURSE?  
20 A. YES, I DO.  
21 Q. AND DR. CARCHMAN ALSO HAD RETIRED FROM  
22 PHILIP MORRIS. SAME REASONS?  
23 A. I DON'T KNOW WHAT HIS REASONS WERE, BUT HE  
24 WANTED TO RETIRE. THEY OFFERED A NICE PACKAGE, AND IT WAS  
25 RIGHT -- RIGHT FOR ME.  
26 Q. HOW MUCH TIME DO YOU NOW SPEND CONSULTING FOR  
27 PHILIP MORRIS?  
28 A. SOMEWHERE BETWEEN A DAY A WEEK, A DAY AND A  
5393  
1 HALF A WEEK, SOMETHING LIKE THAT.  
2 Q. AND WHAT YOU DO IN YOUR CONSULTING WITH  
3 PHILIP MORRIS?  
4 A. I CONSULT ON SOME OF THE SAME PROJECTS THAT I  
5 WAS WORKING ON BEFORE I RETIRED, AS WELL AS CONSULT ON LEGAL  
6 ISSUES.  
7 Q. SO PART OF YOUR TIME IS CONSULTING ON LEGAL  
8 ISSUES AND TESTIFYING IN CASES LIKE THIS, IS THAT FAIR TO  
9 SAY?  
10 A. THAT IS CORRECT, YES.  
11 Q. AND THE REST OF YOUR CONSULTING TIME IS SPENT  
12 CONTINUING WORK ON PRODUCT DEVELOPMENT ISSUES AT  
13 PHILIP MORRIS; IS THAT RIGHT?  
14 A. YES.  
15 Q. AND YOU SAID YOU DO THAT ABOUT ONE DAY A WEEK,  
16 ROUGHLY?  
17 A. ON AVERAGE, ABOUT A DAY A WEEK.  
18 Q. WHAT DO YOU DO THE OTHER DAYS OF THE WEEK?  
19 A. I'M RETIRED. I LOVE TO FISH. SO I FISH A GOOD  
20 BIT. I HAVE FOUR GRANDCHILDREN, AND WHENEVER I GET WITH  
21 THEM, I LOVE TO BE WITH THEM. AND WE WORK IN THE CHURCH  
22 SOME. AND WITH THE RESCUE SQUAD.  
23 Q. DO YOU RECOMMEND RETIREMENT?  
24 A. ABSOLUTELY.  
25 Q. LET'S TALK A LITTLE BIT ABOUT YOUR JOB BEFORE  
26 YOU RETIRED.  
27 A. RIGHT.  
28 Q. AND LET'S START WITH YOUR EDUCATION.  
5394  
1 WHY DON'T YOU TELL US A LITTLE BIT ABOUT YOUR  
2 EDUCATION, STARTING WITH COLLEGE?  
3 A. OKAY. I WENT TO COLLEGE IN MY HOMETOWN OF  
4 DAHLONEGA, GEORGIA. THAT'S UP IN THE FOOTHILLS OF GEORGIA  
5 ABOUT 70 MILES NORTH OF ATLANTA.  
6 NORTH GEORGIA COLLEGE AT THE TIME WAS  
7 ESSENTIALLY A MILITARY COLLEGE -- MILITARY COLLEGE OF  
8 GEORGIA. GOT A BS DEGREE IN CHEMISTRY FROM NORTH GEORGIA  
9 COLLEGE IN 1965.  
10 AFTER THAT, I WENT TO THE UNIVERSITY OF --  
11 ALSO, GOT A COMMISSION FROM NORTH GEORGIA COLLEGE.  
12 Q. COMMISSION, MEANING, A MILITARY COMMISSION  
13 AFTER YOU GOT OUT OF COLLEGE --  
14 A. YES, THAT'S RIGHT.  
15 Q. -- IS THAT RIGHT?  
16 A. THAT'S RIGHT. YEAH. I WAS COMMISSIONED IN THE  
17 CHEMICAL CORPS IN THE ARMY.  
18 Q. OKAY.

19 A. AND THEN I WENT TO THE UNIVERSITY OF GEORGIA IN  
20 '65. GRADUATED FROM UNIVERSITY OF GEORGIA IN 1970 WITH A  
21 PH.D. IN ANALYTICAL CHEMISTRY.

22 Q. LET ME STOP YOU THERE.

23 YOU GOT YOUR PH.D. IN ANALYTICAL CHEMISTRY FROM  
24 THE UNIVERSITY OF GEORGIA IN 1970.

25 WHAT IS ANALYTICAL CHEMISTRY?

26 A. ANALYTICAL CHEMISTRY IS THE AREA OF CHEMISTRY  
27 THAT INVOLVES MAKING MEASUREMENTS OF, FOR EXAMPLE,  
28 CONSTITUENTS IN SMOKE OR CONSTITUENTS IN TOBACCO.

5395

1 SO IF YOU WANTED SOMEBODY TO MAKE A MEASUREMENT  
2 OF NICOTINE, EITHER IN SMOKE OR IN TOBACCO, YOU WOULD FIND AN  
3 ANALYTICAL CHEMIST SOMEWHERE, AND HE WOULD SET UP A METHOD  
4 AND MAKE THAT MEASUREMENT FOR YOU.

5 Q. SO, FOR EXAMPLE, IF YOU WERE TO ANALYZE COFFEE,  
6 AN ANALYTICAL CHEMIST WOULD TRY TO DETERMINE HOW MUCH OF  
7 VARIOUS CONSTITUENTS WERE CONTAINED IN THE COFFEE; IS THAT  
8 CORRECT?

9 A. THAT'S CORRECT, YES.

10 Q. TELL US YOUR FIRST JOBS AFTER YOU LEFT -- AFTER  
11 YOU FINISHED YOUR PH.D. IN 1970.

12 YOU WERE STILL IN THE MILITARY?

13 A. YES, I WAS. I HAD AN OBLIGATION TO THE  
14 MILITARY FROM NORTH GEORGIA COLLEGE, SO I HAD TO GO TO THE  
15 MILITARY. I WENT TO DUGWAY, UTAH FOR MY -- TO SERVE OUT MY  
16 COMMITMENT, WHICH WAS TWO YEARS. BUT IT ENDED A LITTLE EARLY  
17 BECAUSE PEOPLE WERE GETTING OUT OF THE ARMY EARLY AT THAT  
18 TIME. SO I GOT OUT OF THE ARMY, I GUESS IT WAS, IN '71.  
19 SOMETIME IN '71, I GUESS.

20 Q. AND WHAT WAS YOUR JOB WHILE YOU WERE IN THE  
21 ARMY IN ACTIVE SERVICE?

22 A. I WAS A CHEMICAL TEST OFFICER. WHAT WE DID AS  
23 CHEMICAL TEST OFFICERS, I WAS RESPONSIBLE FOR TRYING TO  
24 DEVELOP BETTER GAS MASKS FOR THE ARMY AND DEVELOPING WHAT  
25 THEY CALL COLLECTIVE PROTECTIVE UNITS THAT WOULD -- YOU COULD  
26 PUT A NUMBER OF PEOPLE IN, KEEP THEM AWAY FROM BIOLOGICAL AND  
27 CHEMICAL AGENTS.

28 Q. AND AFTER WORKING ON THESE PROJECTS, GAS MASKS  
5396

1 AND OTHER KINDS OF PROJECTS --

2 A. YES.

3 Q. -- IN THE ARMY, WHERE DID YOU GO TO WORK?

4 A. I WENT TO WORK FOR GENERAL ELECTRIC IN  
5 BAY ST. LOUIS, MISSISSIPPI.

6 Q. ST. LOUIS, MISSISSIPPI OR MISSOURI?

7 A. MISSISSIPPI. BAY ST. LOUIS. NOT ST. LOUIS --

8 Q. NOT THE ST. LOUIS WE'RE ALL THINKING OF?

9 A. NO.

10 Q. WHAT DID YOU DO FOR GENERAL ELECTRIC?

11 A. I WAS AN ANALYTICAL CHEMIST. BUT THE  
12 RESPONSIBILITY OF THE FACILITY THERE WAS TO TEST -- TEST-FIRE  
13 THE SATURN V ROCKETS BEFORE THEY WERE PLACED ON -- THE ROCKET  
14 THAT TOOK SOME PEOPLE TO THE MOON, I GUESS.

15 Q. THIS WAS GENERAL ELECTRIC WORKING WITH NASA --

16 A. CORRECT.

17 Q. -- ON THE SATURN FIVE ROCKET?

18 A. THAT'S CORRECT.

19 Q. WHAT WAS YOUR JOB WORKING ON THE SATURN V  
20 ROCKET?

21 A. AS AN ANALYTICAL CHEMIST, I MADE MEASUREMENTS  
22 OF VARIOUS CHEMICALS THEY WERE LOOKING FOR IN WHATEVER  
23 SITUATION.

24 Q. WHAT WERE YOU TRYING TO ACCOMPLISH OR TO  
25 ACHIEVE AS PART OF YOUR JOB?  
26 A. PART OF MY JOB WAS TO EVALUATE SOME OF THE  
27 ENVIRONMENTAL IMPACT OF THE ROCKET FUELS THAT WERE BEING  
28 USED.

5397

1 Q. WAS THAT AN EFFORT TO TRY TO MAKE THE ROCKET  
2 MORE SAFE IN THE EVENT OF A MISFIRE OR EXPLOSION?  
3 A. MAKE IT MORE SAFE IN GENERAL. BUT THE ROCKET  
4 FUELS THEM -- THE EFFLUENTS IN THOSE ARE -- THE GASES THAT  
5 COME OUT FROM THOSE COULD HAVE BEEN TOXIC.

6 Q. BY THE WAY, YOU WERE HONORABLY DISCHARGED FROM  
7 THE ARMY?

8 A. YES, I WAS.

9 Q. AFTER YOU WERE DONE AT GENERAL ELECTRIC, WHERE  
10 DID YOU GO TO WORK NEXT?

11 A. I NEXT WENT TO WORK FOR PHILIP MORRIS.

12 Q. AND THAT BRINGS US TO 1972 WHEN YOU SAID YOU  
13 STARTED AT PHILIP MORRIS?

14 A. YES, SIR.

15 Q. OKAY. LET'S TALK A LITTLE BIT ABOUT WHAT YOU  
16 DID AT PHILIP MORRIS DURING THE 26 YEARS THAT YOU WERE  
17 EMPLOYED THERE.

18 WHY DON'T YOU FIRST JUST TELL US THE DIFFERENT  
19 POSITIONS THAT YOU HELD WHILE YOU WERE AT PHILIP MORRIS --  
20 ALWAYS IN THE RESEARCH AND DEVELOPMENT DEPARTMENT?

21 A. ALWAYS, YES.

22 Q. TELL US WHAT POSITIONS YOU HELD OVER TIME?

23 A. WHEN I WENT THERE IN '72, MY FIRST POSITION WAS  
24 AN ASSOCIATE SCIENTIST, AND I WORKED IN VARIOUS AREAS. BUT  
25 MY PRIMARY RESPONSIBILITY WHEN I GOT THERE WAS TO ESTABLISH A  
26 NEW LABORATORY, A NUCLEAR MAGNETIC RESONANCE LABORATORY.  
27 NUCLEAR MAGNETIC RESONANCE IS VERY MUCH AKIN TO  
28 MAGNETIC RESONANCE IMAGING, WHICH IS USED NOW FOR LOOKING AT  
5398

1 WHOLE-BODY IMAGING. BUT AT THE TIME -- OR, AND STILL,  
2 CHEMISTS DON'T USE IT THAT WAY, OF COURSE. WE USE IT FOR  
3 LOOKING AT CHEMICAL CONSTITUENTS IN VARIOUS MATERIALS.  
4 SO WE SET UP A LABORATORY DOING THAT. I WAS  
5 PROMOTED TO RESEARCH SCIENTIST IN '73. CONTINUED TO DO THE  
6 SAME TYPE OF WORK.

7 IN '78, I WAS PROMOTED TO SENIOR SCIENTIST AND  
8 MOVED TO THE COMPUTER APPLICATIONS DIVISION.

9 AND IN THE COMPUTER APPLICATIONS DIVISION, MY  
10 RESPONSIBILITIES WERE TO AUTOMATE THE LABORATORIES TO TRY TO  
11 GET DATA OUT OF THE LABORATORIES INTO THE COMPUTERS SO THAT  
12 THE DATA COULD BE BETTER ANALYZED. AND TODAY, IT SOUNDS  
13 SILLY THAT SOMEBODY WOULD PUT SOMEBODY IN ANOTHER AREA AND  
14 HAVE THEM WORK ON DOING SOMETHING LIKE THAT. BECAUSE WE  
15 WANTED TO GET COMPUTERS IN A LABORATORY.

16 NOW, YOU JUST GO BUY IT AND PUT IT IN THERE.

17 BUT IN '78 THAT WASN'T THE CASE. SO WE HAD TO BUILD THE  
18 HARDWARE AND THE SOFTWARE -- OR WRITE THE SOFTWARE, THE WHOLE  
19 NINE YARDS, TO GET THE DATA FROM THE LABORATORY INTO THE  
20 COMPUTER SO IT COULD BE BETTER ANALYZED.

21 I GUESS --

22 Q. SO AFTER YOU SPENT YOUR TIME ON COMPUTERIZATION  
23 PROJECTS, WHAT DID YOU DO NEXT?

24 A. MY NEXT JOB, I WAS PROMOTED TO THE MANAGER OF A  
25 DIVISION, THE BIOMATERIALS SCIENCE DIVISION IN 1981, I GUESS  
26 IT WAS. AND I STAYED MANAGER OF THAT DIVISION UNTIL 1987  
27 WHEN I WAS MOVED TO ANOTHER DIVISION.

28 Q. BEFORE YOU MOVED TO THE OTHER DIVISION, YOU

5399

1 WERE MANAGER OF BIOMATERIAL SCIENCE?

2 A. RIGHT.

3 Q. CAN YOU DESCRIBE A LITTLE BIT FOR US WHAT THAT  
4 JOB WAS AND WHAT YOU WERE TRYING TO ACCOMPLISH THERE?

5 A. BIOMATERIALS SCIENCE DIVISION HAD MATERIAL  
6 PROJECTS WITHIN IT. IT HAD A PROJECT IN IT THAT WAS  
7 RESPONSIBLE FOR ATTEMPTING TO REMOVE NITRATE FROM ONE OF OUR  
8 PROCESSES.

9 IT WAS RESPONSIBLE FOR LOOKING AT BETTER WAYS  
10 TO IMPROVE THE MECHANICAL STRENGTHS OF THE TOBACCO SO THAT IT  
11 COULD GO THROUGH THE PROCESS WITHOUT SHATTERING OR BREAKING  
12 UP AND TURNING INTO DUST BETTER.

13 IT HAD A MICROSCOPY GROUP AND HAD, I'M SURE,  
14 OTHER GROUPS THAT I DON'T RECALL AT THIS POINT.

15 Q. AND ALL OF THESE AREAS THAT YOU'VE DESCRIBED  
16 WERE ALL IN THE GENERAL AREA OF PRODUCT DEVELOPMENT FOR  
17 CIGARETTES, CORRECT?

18 A. THAT'S CORRECT, YES.

19 Q. OKAY. WHAT WAS YOUR NEXT JOB AFTER MANAGER?

20 A. THE RESEARCH WENT INTO THE PRODUCT DEVELOPMENT  
21 AND -- PRODUCT DEVELOPMENT, YES.

22 Q. OKAY. WHAT WAS YOUR NEXT JOB AFTER YOU WERE  
23 MANAGER OF BIOMATERIAL SCIENCE?

24 A. I WAS MADE MANAGER OF THE PHYSICAL RESEARCH  
25 DIVISION.

26 Q. AND WHAT DID YOU DO AS MANAGER OF THE PHYSICAL  
27 RESEARCH DIVISION?

28 A. AT THE TIME, I WAS MOVED FROM THE BIOMATERIALS  
5400

1 SCIENCE DIVISION INTO THE PHYSICAL RESEARCH DIVISION, THERE  
2 WAS A SMALL REORGANIZATION WITHIN R&D. SO I TOOK WITH ME  
3 SOME OF THE GROUPS THAT I HAD IN THE BIOMATERIALS SCIENCE  
4 DIVISION INTO THE PHYSICAL RESEARCH DIVISION.

5 BUT WITHIN THAT DIVISION, WE HAD A GROUP THAT  
6 WAS RESPONSIBLE FOR DEVELOPING A PROCESS TO REMOVE NICOTINE  
7 FROM TOBACCO, TO DEVELOP NONCONVENTIONAL CIGARETTES, TO TRY  
8 TO FIND A WAY TO REDUCE THE IGNITION PROPENSITY OF  
9 CIGARETTES.

10 BY THAT, I MEAN, A CIGARETTE THAT'S CARELESSLY  
11 HANDLED, IF IT'S DROPPED ON FURNITURE OR ON BEDDING, IT CAN  
12 CAUSE A FIRE. SO WE WERE TRYING TO FIGURE OUT WAYS TO REDUCE  
13 THAT OR IMPROVE THE CIGARETTES SO THAT THE FIRES WOULDN'T BE  
14 SO LIKELY TO OCCUR.

15 AND WE HAD THE MICROSCOPY GROUP IN THE DIVISION  
16 AS WELL AS MAYBE SOME OTHERS, TOO. I DON'T RECALL AT THIS  
17 POINT EITHER.

18 Q. YOU'VE MENTIONED MICROSCOPY A COUPLE OF TIMES.  
19 WHAT IS THAT?

20 A. MICROSCOPY IS A GROUP THAT INVESTIGATES THE  
21 MICROSTRUCTURE OF TOBACCO. I'LL TRY TO EXPLAIN THAT A LITTLE  
22 BIT BETTER, TOO.

23 THEY USE LIGHT MICROSCOPES SO YOU CAN MAGNIFY  
24 THE SURFACE OF TOBACCO OR OTHER MATERIALS, OR THE INSIDE OF  
25 TOBACCO. THEY ALSO HAVE SCANNING ELECTRON MICROSCOPES  
26 AS WELL AS TRANSMISSION ELECTRON MICROSCOPES SO THAT  
27 THEY CAN ANALYZE THE TOBACCO IN A WAY THAT OTHER TECHNIQUES  
28 CAN'T DO.

5401

1 YOU CAN LOOK AT INDIVIDUAL CELLS IN THE  
2 TOBACCO, LOOK AT BREAKAGE OF TOBACCO, TRY TO FIGURE OUT HOW  
3 IT WAS BROKE -- OR HOW IT WAS BREAKING AND COMING APART.  
4 THAT TYPE OF THING.

5 Q. OKAY. SO IN ADDITION TO MICROSCOPY AMONG THE  
6 PROJECTS THAT YOU'VE BEEN WORKING ON IN THESE JOBS, YOU WERE  
7 TRYING TO DEVELOP WAYS TO REMOVE NICOTINE FROM TOBACCO --  
8 A. RIGHT.  
9 Q. -- RIGHT?  
10 TRYING TO REMOVE SOME OF THE CONSTITUENTS, LIKE  
11 NITRATES --  
12 AND WE'LL TALK ABOUT THIS MORE IN A WHILE.  
13 NITRATES IS ONE OF THE MORE HARMFUL  
14 CONSTITUENTS IN TOBACCO?  
15 A. YES.  
16 Q. -- DEVELOPING NONCONVENTIONAL TOBACCO  
17 PRODUCTS -- AND WE'LL TALK ABOUT THAT IN A LITTLE WHILE,  
18 ALSO -- AS WELL AS OTHER PRODUCT DEVELOPMENT PROPOSALS,  
19 CORRECT?  
20 A. YES.  
21 Q. OKAY. WHAT WAS YOUR JOB AFTER YOU WERE MANAGER  
22 OF PHYSICAL RESEARCH?  
23 A. I WAS, IN 19 -- I GUESS 1991, I WAS MADE  
24 DIRECTOR OF BASIC RESEARCH. AND A DIRECTOR HAS SEVERAL  
25 MANAGERIAL GROUPS UNDER THEM. AT THE TIME, I HAD -- I THINK  
26 I HAD THREE; THE PHYSICAL RESEARCH DIVISION, THE COMPUTER  
27 APPLICATIONS DIVISION AND A CHEMICAL RESEARCH DIVISION.  
28 Q. SO YOU BECAME MORE OF A BOSS OF THESE THREE  
5402  
1 DIVISIONS IN THE RESEARCH AND DEVELOPMENT DEPARTMENT?  
2 A. THAT'S CORRECT, YES.  
3 Q. FAIR ENOUGH. OKAY.  
4 AND WHAT JOB DID YOU HAVE IN YOUR LAST FEW  
5 YEARS AT PHILIP MORRIS BEFORE YOU RETIRED?  
6 A. MY LAST JOB, WHICH I WAS PROMOTED TO IN '93, I  
7 THINK, MY TITLE WAS TECHNOLOGY FELLOW.  
8 Q. WHAT DOES A TECHNOLOGY FELLOW DO?  
9 A. OTHER THAN HAVING A STRANGE TITLE?  
10 Q. YES.  
11 A. I WAS RESPONSIBLE FOR EVALUATING -- FINDING  
12 TECHNOLOGIES IN THE OUTSIDE, EVALUATING THOSE, TRYING TO FIND  
13 OUT IF THEY WOULD ASSIST PHILIP MORRIS OR NOT. AND IF THEY  
14 WOULD, TO PROVIDE THOSE IN-HOUSE, FURTHER EVALUATE THEM. AND  
15 THEN FINALLY, IF THEY REALLY WERE GOING TO PAN OUT, PUT THEM  
16 INTO PRACTICE EITHER IN THE PROCESS OR MAKING NEW PRODUCT.  
17 Q. OKAY. AND AGAIN, THOSE TECHNOLOGIES WOULD HAVE  
18 INCLUDED, AMONG OTHER THINGS, POSSIBLE TECHNOLOGIES TO TRY TO  
19 REDUCE THE RISK OF CIGARETTES; IS THAT RIGHT?  
20 A. THAT'S CORRECT, YES.  
21 Q. OKAY. LET'S TALK FOR A FEW MINUTES GENERALLY  
22 ABOUT THE RESEARCH AND DEVELOPMENT DEPARTMENT AT  
23 PHILIP MORRIS.  
24 GENERALLY, WHAT WOULD YOU DESCRIBE TO BE THE  
25 FUNCTION OF THE R&D DEPARTMENT AT PHILIP MORRIS?  
26 A. PRIMARY FUNCTION IS TO MAKE PRODUCT  
27 INVOLVEMENTS, TO MAKE SAFER CIGARETTES, IF WE CAN, TO REDUCE  
28 THE RISK OF CIGARETTES.  
5403  
1 Q. OKAY. AND WHERE'S THE R&D DEPARTMENT LOCATED?  
2 A. IN RICHMOND, VIRGINIA.  
3 Q. HAS IT GROWN -- OR DID IT GROW OVER THE  
4 26 YEARS THAT YOU WERE AT PHILIP MORRIS?  
5 A. YES, IT DID.  
6 Q. ABOUT HOW BIG WAS IT WHEN YOU BEGAN IN 1972?  
7 A. SOMETHING ON THE ORDER OF 300 PEOPLE, AS I  
8 RECALL.  
9 Q. 300 PEOPLE. FAIRLY LARGE R&D DEPARTMENT EVEN

10 BACK THEN?  
11 A. YEAH. PRETTY GOOD SIZE.  
12 Q. OKAY. AND BY HOW MUCH DID IT GROW BY THE TIME  
13 YOU LEFT IN 1998?  
14 A. I THINK IT WAS ON THE ORDER OF 5- OR 600 PEOPLE  
15 AT THAT TIME. THAT'S ABOUT WHAT IT IS.  
16 Q. CLOSE TO DOUBLED IN SIZE --  
17 A. YES.  
18 Q. -- OVER THE 26 YEARS YOU WERE THERE?  
19 A. RIGHT.  
20 Q. ANY PARTICULAR TIME WHEN A LARGE PART OF THE  
21 GROWTH TOOK PLACE?  
22 A. MOST OF IT -- WELL, I REALLY CAN'T SAY THERE  
23 WAS A BIG SPURT OF GROWTH, BUT THERE WAS A SUBSTANTIAL GROWTH  
24 IN THE EARLY '70'S --  
25 Q. OKAY.  
26 A. -- WHEN I FIRST WENT THERE.  
27 Q. AND THEN FAIRLY CONSTANT GROWTH OVER THE YEARS?  
28 A. YEAH, PRETTY MUCH.

5404

1 Q. YOU MENTIONED THAT BY THE TIME YOU RETIRED IN  
2 1998, THERE WERE 5- OR 600 PEOPLE.  
3 HOW MANY WERE SCIENTISTS AND ENGINEERS?  
4 A. AROUND HALF OR MAYBE MORE.  
5 Q. AND HOW MANY OF THEM HAD PH.D'S?  
6 A. I THINK AROUND 20 OR 30 PERCENT. SOMETHING OF  
7 THAT NATURE.  
8 Q. IS THE RESEARCH AND DEVELOPMENT DEPARTMENT  
9 DIVIDED INTO AREAS AT PHILIP MORRIS?  
10 A. YES, IT IS.  
11 Q. AND CAN YOU DESCRIBE FOR THE JURY WHAT THOSE  
12 AREAS ARE?  
13 A. GENERALLY -- WELL, THE AREAS ARE BROKEN DOWN  
14 ACCORDING TO THE DISCIPLINE; PHYSICS, CHEMISTRY, BIOLOGY,  
15 THAT TYPE OF THING, AS WELL AS BEING BROKEN INTO OTHER  
16 SUBGROUPS, SUCH AS BIG PROJECTS WOULD HAVE A MANAGERIAL GROUP  
17 AROUND.  
18 Q. OKAY. AND DID YOU HAVE AN AREA OF SPECIALTY  
19 WITHIN THE RESEARCH AND DEVELOPMENT DEPARTMENT?  
20 A. YES.  
21 Q. WHAT WAS THAT?  
22 A. PRIMARY ANALYTICAL CHEMISTRY AND PRODUCT  
23 DEVELOPMENT.  
24 Q. OKAY. AND PRODUCT DEVELOPMENT WAS PART OF YOUR  
25 RESPONSIBILITY FOR A LARGE NUMBER OF YEARS, FAIR TO SAY?  
26 A. YES.  
27 Q. AND GENERALLY, CAN YOU DESCRIBE WHAT YOUR  
28 INVOLVEMENT WAS IN PRODUCT DEVELOPMENT?

5405

1 I KNOW WE'VE TOUCHED ON IT JUST A LITTLE BIT.  
2 A. IT INVOLVED WORK ON FILTERS WAS ONE. I MEAN,  
3 THAT'S A GENERAL -- THAT'S A LOT OF STUFF COVERED WHEN I SAY  
4 THAT.  
5 MY FIRST JOB WHEN I WAS THERE WAS TO --  
6 ACTUALLY, THE FIRST WEEK I GOT TO PHILIP MORRIS, ONE OF THE  
7 THINGS I WAS ATTEMPTING TO DO WAS TO FIND OUT HOW EFFICIENT  
8 THE CELLULOSE ACETATE FILTER WAS IN THE REMOVAL OF VOLATILE  
9 NITROSAMINES. SO YOU SET UP A TECHNIQUE FOR DOING THAT. AND  
10 WORKED ON THAT FOR A LITTLE WHILE TRYING TO ACQUIRE THE  
11 EQUIPMENT FOR THE NMR LABORATORY.  
12 Q. LET ME INTERRUPT TO FOLLOW UP ON A POINT YOU  
13 JUST MADE.  
14 WHEN YOU CAME IN 1972 AND IN THE YEARS THAT



15 FOLLOWED, WAS PART OF YOUR JOB TO LEARN ABOUT RESEARCH AND  
16 DEVELOPMENT EFFORTS THAT PROCEEDED YOU --

17 A. YES, IT WAS.

18 Q. -- AT PHILIP MORRIS?

19 A. (WITNESS NODS HEAD UP AND DOWN.)

20 Q. SO YOUR INVOLVEMENT IN PRODUCT DEVELOPMENT  
21 INCLUDED WORK ON FILTERS, AND I THINK YOU'VE ALSO TOLD US A  
22 LITTLE BIT ABOUT TRYING TO TAKE NICOTINE OUT OF CIGARETTES?

23 A. RIGHT.

24 Q. TRYING TO COME UP WITH NONCONVENTIONAL  
25 PRODUCTS --

26 A. RIGHT.

27 Q. AND OTHER PROJECTS AS WELL --

28 A. RIGHT.

5406

1 Q. -- IS THAT RIGHT?

2 A. YES.

3 Q. WHY WAS PHILIP MORRIS TRYING TO MAKE CIGARETTES  
4 THAT REDUCED THE RISK OF SMOKING?

5 A. WELL, IF YOU HAVE SOMETHING THAT IS RISKY, SUCH  
6 AS A CIGARETTE, I THINK MY OPINION OF WHY WE DID THAT WAS TO  
7 TRY TO REDUCE THAT RISK. SO, I MEAN, THAT'S WHAT WE WERE  
8 DOING.

9 Q. DID YOU FEEL THAT PHILIP MORRIS MADE PROGRESS  
10 DURING THE 26 YEARS YOU WERE THERE?

11 A. YES, WE DID.

12 Q. OKAY. AND IN YOUR CAPACITY AS A CONSULTANT, IS  
13 PHILIP MORRIS TODAY STILL TRYING TO REDUCE THE RISK  
14 ASSOCIATED WITH SMOKING?

15 A. YES, WE ARE.

16 Q. NOW, I WANT TO TALK IN A FEW MINUTES IN  
17 SPECIFICS ABOUT SOME OF THE CIGARETTE DESIGNS THAT  
18 PHILIP MORRIS HAS WORKED ON OVER TIME.

19 BUT I WANT TO ASK YOU, I GUESS, THE ULTIMATE  
20 QUESTIONS RIGHT UP FRONT.

21 PHILIP MORRIS HAS WORKED OVER THE YEARS TO TRY  
22 TO REDUCE THE RISKS OF SMOKING, TRUE?

23 A. TRUE. YES, WE HAVE.

24 Q. OKAY. IN YOUR OPINION, HAVE THE CIGARETTES  
25 MADE BY PHILIP MORRIS OVER THE YEARS ALWAYS BEEN THE STATE OF  
26 THE ART IN TERMS OF RISK REDUCTION?

27 A. YES, THEY HAVE.

28 Q. AND WHAT DO YOU MEAN BY "STATE OF THE ART"?

5407

1 A. WELL, AS SOON AS SOMETHING WAS AVAILABLE THAT  
2 WOULD BE COMMERCIALY ACCEPTABLE, PHILIP MORRIS HAS PUT THAT  
3 ON THE MARKET. AND TO REDUCE THE TAR AND NICOTINE, TO  
4 PRODUCE SPECIFIC CONSTITUENTS WITHIN THE CIGARETTE. THEY DID  
5 THAT AS QUICKLY AS THE TECHNOLOGY ALLOWED IT.

6 Q. TO YOUR KNOWLEDGE, HAS THERE EVER BEEN A  
7 POSSIBLE CIGARETTE DESIGN OR POSSIBLE CIGARETTE IMPROVEMENT  
8 THAT MIGHT REDUCE THE RISK OF SMOKING THAT PHILIP MORRIS HAS  
9 INVESTIGATED OR PURSUED?

10 A. NO.

11 Q. IS THERE ANY SAFER CIGARETTE DESIGN THAT YOU'RE  
12 AWARE OF THAT COULD HAVE BEEN MANUFACTURED AND SOLD TO  
13 CONSUMERS THAT PHILIP MORRIS CHOSE NOT TO MANUFACTURE AND  
14 SELL TO CONSUMERS THAT MIGHT HAVE REDUCED THE RISKS OF  
15 SMOKING?

16 A. NO.

17 Q. TO YOUR KNOWLEDGE, IS THERE ANY CIGARETTE  
18 COMPANY ANYWHERE IN THE WORLD THAT HAS DONE MORE TO TRY TO  
19 REDUCE THE RISKS OF SMOKING?

20 A. NO. NOT TO MY KNOWLEDGE, NO.  
21 Q. NOW, HAVING SAID ALL OF THAT, AND MAYBE TO  
22 LAUNCH OUR DISCUSSION ABOUT SPECIFIC TECHNOLOGIES, IS THERE  
23 ANY SUCH THING AS A SAFE CIGARETTE?  
24 A. NO, THERE'S NOT.  
25 Q. HAS THERE EVER BEEN A DESIGN OUT THERE THAT WAS  
26 FEASIBLE AND POSSIBLE THAT WOULD HAVE MANUFACTURED A  
27 CIGARETTE THAT IS SAFE?  
28 A. NOT TO MY KNOWLEDGE, NO.  
5408  
1 Q. NOW, LET'S TALK SPECIFICALLY ABOUT SOME OF THE  
2 TECHNOLOGIES.  
3 YOU REFERRED BEFORE TO SOMETHING CALLED  
4 NONCONVENTIONAL CIGARETTES, AND I ASSUME THAT MEANS THERE'S  
5 ALSO SOMETHING CALLED CONVENTIONAL CIGARETTES.  
6 A. RIGHT.  
7 Q. WHAT'S THE DIFFERENCE BETWEEN CONVENTIONAL  
8 CIGARETTES AND NONCONVENTIONAL CIGARETTES?  
9 A. CONVENTIONAL CIGARETTES ARE CIGARETTES THAT ARE  
10 INTENDED TO BE LIT WITH A MACHINE OR A LIGHTER TO BURN THE  
11 TOBACCO, TO GENERATE THE HEAT OR THE ENERGY TO DRIVE OFF THE  
12 SMOKE FROM THE TOBACCO. AND THAT'S WHAT I MEAN BY  
13 CONVENTIONAL CIGARETTE.  
14 Q. OKAY. SO CONVENTIONAL CIGARETTE -- FOR  
15 EXAMPLE, THE CIGARETTES THAT WE'VE ALL SEEN IN THE COURTROOM,  
16 SUCH AS MARLBOROS, THESE ARE CONVENTIONAL CIGARETTES?  
17 A. YES, THEY ARE.  
18 Q. WHICH IS TOBACCO AND OTHER INGREDIENTS AND  
19 PAPER THAT YOU LIGHT --  
20 A. AND FILTER.  
21 Q. -- AND TOBACCO BURNS?  
22 A. RIGHT.  
23 Q. OKAY. AND ALL THE BRANDS OF CIGARETTES THAT  
24 PEOPLE ARE GENERALLY FAMILIAR WITH, MARLBORO AND MERIT AND  
25 BENSON & HEDGES AND CAMELS AND WINSTONS, THOSE ARE ALL  
26 CONVENTIONAL CIGARETTES, RIGHT?  
27 A. THAT'S CORRECT, YES.  
28 Q. WHAT'S A NONCONVENTIONAL CIGARETTE?  
5409  
1 A. A NONCONVENTIONAL CIGARETTE IS A CIGARETTE THAT  
2 YOU HEAT TOBACCO WITH SOME HEAT SOURCE OTHER THAN BURNING  
3 TOBACCO TO GENERATE SMOKE AND NICOTINE AND FLAVORS OFF THE  
4 TOBACCO. YOU CAN CHOOSE TO HEAT IT WITH ANY NUMBER OF WAYS.  
5 BUT NOT HEATING IT WITH BURNING TOBACCO.  
6 Q. SO A NONCONVENTIONAL CIGARETTE IS SOMETHING  
7 THAT DOESN'T BURN TOBACCO AT ALL?  
8 A. THAT'S RIGHT. IT HEATS TOBACCO. IT MAY SCORCH  
9 THE TOBACCO TO GENERATE THE SMOKE, BUT IT DOESN'T BURN,  
10 DOESN'T COMBUST THE TOBACCO TO DERIVE ENERGY TO GET SMOKE OFF  
11 OF IT.  
12 Q. NOW, OVER THE YEARS, IS IT FAIR TO SAY THAT  
13 PHILIP MORRIS HAS BEEN WORKING ON TRYING TO IMPROVE  
14 CONVENTIONAL CIGARETTES TO TRY TO MAKE THEM LESS RISKY; YES?  
15 A. YES, WE HAVE.  
16 Q. AND PHILIP MORRIS HAS BEEN WORKING OVER THE  
17 YEARS TO TRY TO DEVELOP NONCONVENTIONAL CIGARETTE PRODUCTS  
18 THAT MIGHT REDUCE THE RISKS OF SMOKING AS WELL?  
19 A. THAT'S TRUE, TOO.  
20 Q. AND ARE YOU GOING TO TALK ABOUT BOTH KINDS OF  
21 WORK TODAY?  
22 A. YES, I AM, I HOPE.  
23 Q. OKAY. AND WE ACTUALLY BROUGHT SOME EXAMPLES OF  
24 SOME OF THE PRODUCTS --

25 A. YES, SIR. I HAVE THEM.  
26 Q. -- WHICH WE'LL SHOW.  
27 LET'S START BY TALKING ABOUT IMPROVEMENTS TO  
28 CONVENTIONAL CIGARETTES.  
5410  
1 A. OKAY.  
2 Q. AND MAYBE THE PLACE TO START WOULD BE TO PUT UP  
3 THIS DEMONSTRATIVE, WHICH WE CAN MARK AS NO. 11095.  
4  
5 (I.D. 11095 - DEMONSTRATIVE)  
6  
7 Q. BY MR. LEITER: AND ARE YOU FAMILIAR WITH THAT  
8 DEMONSTRATIVE?  
9 A. YES, I AM.  
10 Q. IS ONE OF THE WAYS TO REDUCE THE RISK OR TO TRY  
11 TO REDUCE THE RISK OF CONVENTIONAL CIGARETTES TO REDUCE THE  
12 TAR AND NICOTINE?  
13 A. YES.  
14 Q. AND IS THAT SOMETHING PHILIP MORRIS HAS WORKED  
15 ON OVER THE YEARS?  
16 A. YES, WE HAVE.  
17 Q. EVEN BEFORE YOU GOT THERE?  
18 A. YES.  
19 Q. AND I SEE THAT THERE IS LISTED HERE DIFFERENT  
20 WAYS IN WHICH THAT HAPPENED.  
21 DOES IT MAKE SENSE, DR. WHIDBY, FOR YOU TO COME  
22 DOWN TO THE CHART AND DESCRIBE FOR THE JURY THE DIFFERENT  
23 WAYS IN WHICH PHILIP MORRIS HAS TRIED TO REDUCE TAR AND  
24 NICOTINE DELIVERY?  
25 A. YES.  
26 MR. LEITER: IS THAT OKAY YOUR HONOR?  
27 THE COURT: UH-HUH.  
28 THE WITNESS: THANK YOU, SIR.  
5411  
1 MR. LEITER: OKAY.  
2 Q. NOW, BEFORE WE DESCRIBE THE ACTUAL PROCESSES,  
3 COULD YOU EXPLAIN TO THE JURY WHAT THE GREEN LINE AND THE  
4 BLUE LINE REPRESENTS?  
5 A. OKAY. I'LL PUT MY GLASSES ON SO I CAN SEE.  
6 THE GREEN LINE HERE INDICATED BY THIS -- AND  
7 THE SCALE ASSOCIATED WITH THE GREEN LINE'S ON THIS SIDE OF  
8 THE CHART -- THAT'S THE TAR -- TAR YIELD IN CIGARETTES GOING  
9 FROM THE MID '50'S UP UNTIL THE MID '90'S.  
10 SO IT'S GONE FROM SOMEWHERE AROUND THE MID  
11 30'S, UPPER 30'S IN TAR -- THE CIGARETTE IS SOLD ON THE  
12 MARKET -- DOWN TO ABOUT 11 OR 12 MILLIGRAMS.  
13 AND THIS CURVE HERE IS THE SALES-WEIGHTED  
14 AVERAGE OF THE CIGARETTE. SO THE AVERAGE CIGARETTE THAT WAS  
15 ON THE MARKET WAS DELIVERING THIS OR IS DELIVERING THIS LEVEL  
16 OF TAR.  
17 AND THE BLUE LINE IS THE LINE FOR NICOTINE,  
18 WITH NICOTINE BEING SHOWN ON THIS AXIS HERE. AND THE  
19 NICOTINE HAS GONE FROM APPROXIMATELY 2.6 MILLIGRAMS PER  
20 CIGARETTE DOWN TO ABOUT .4 MILLIGRAMS OF NICOTINE PER  
21 CIGARETTE.  
22 SO OVER THE YEARS -- AND THIS IS NOT JUST FOR  
23 PHILIP MORRIS. THIS IS THE ENTIRE INDUSTRY. THE TAR AND  
24 NICOTINE IN CIGARETTES HAS GONE DOWN QUITE A LOT OVER THOSE  
25 YEARS.  
26 Q. OKAY. NOW, BEFORE WE MOVE ON, I'D LIKE TO PUT  
27 UP NO. 2. I'M GOING TO ASK YOU TO TURN AROUND THAT WAY.  
28 A. OKAY.  
5412

1 Q. YOU MENTIONED THAT THE NUMBERS ON THE CHART,  
2 THE GREEN AND THE BLUE LINES, ARE FOR THE INDUSTRY AS A  
3 WHOLE?

4 A. RIGHT.

5 Q. WE'VE PUT UP ON THE SCREEN -- LET'S CALL IT  
6 11096.

7

8 (I.D. 11096 - DEMONSTRATIVE)

9

10 Q. BY MR. LEITER: AND WHAT DOES THAT REPRESENT?

11 A. THIS IS THE TAR AND NICOTINE REDUCTION FOR  
12 PHILIP MORRIS PRODUCTS FROM 1954 TO 1997. AND AGAIN, THIS IS  
13 THE TAR -- ABOUT 36 MILLIGRAMS IN '54 AND ABOUT 12 MILLIGRAMS  
14 IN '97, WHICH IS VERY SIMILAR TO THIS.

15 AND THE NICOTINE, SIMILARLY, HAS GONE FROM  
16 ABOUT 3.3 MILLIGRAMS TO DOWN TO ABOUT .9 MILLIGRAMS.

17 Q. ALL RIGHT. BEFORE WE ASK ABOUT SPECIFIC WAYS  
18 TO REDUCE TAR AND NICOTINE, I WANT TO ASK YOU PARTICULAR  
19 QUESTIONS ABOUT THE NUMBERS.

20 WHEN YOU SAY, FOR EXAMPLE, LOOKING AT  
21 PHILIP MORRIS TAR YIELDS, THEY HAVE COME DOWN TO  
22 12 MILLIGRAMS, DOES THAT MEAN THAT ALL OF PHILIP MORRIS'  
23 CIGARETTES MEASURE OUT AT 12 MILLIGRAMS?

24 A. NO.

25 Q. WHAT DOES IT MEAN?

26 A. IT MEANS THE SALES-WEIGHTED AVERAGE. THE  
27 AVERAGE CIGARETTE AS FAR AS PROPORTIONS SHOWED IN THE  
28 MARKETPLACE AT THAT LEVEL.

5413

1 Q. SO PHILIP MORRIS HAS ON THE MARKET CIGARETTES  
2 WITH HIGHER TAR AND NICOTINE YIELDS AND LOWER TAR AND  
3 NICOTINE YIELDS?

4 A. THAT'S RIGHT. WE HAVE CIGARETTES -- THAT'S  
5 RIGHT. HIGHER AND LOWER YIELDS.

6 Q. AND THESE ARE ALL MEASURED BY THE FTC METHOD  
7 THAT THE JURY HAS HEARD ABOUT, IS THAT TRUE?

8 A. THAT IS CORRECT, YES.

9 Q. ALL RIGHT. NOW, REDUCING ALL OF THE TAR YIELD  
10 IN A CIGARETTE IS KNOWN AS GENERAL REDUCTION?

11 A. YES.

12 Q. AND WHAT IS THE PURPOSE, WHAT IS THE POINT,  
13 WHAT IS THE GOAL OF GENERAL REDUCTION, REDUCING TAR GENERALLY  
14 IN CIGARETTES?

15 A. THE PUBLIC HEALTH COMMUNITY AS WELL AS PEOPLE  
16 WITHIN PHILIP MORRIS, TOXICOLOGISTS, PEOPLE WHO ARE EXPERTS  
17 IN THIS AREA, HAVE ADVISED US THAT IF WE REDUCE THE TAR AND  
18 NICOTINE IN OUR CIGARETTES, WE WOULD REDUCE THE RISK OF THOSE  
19 CIGARETTES.

20 SO THAT'S WHAT WE'VE DONE. THERE'S A LITTLE  
21 PROBLEM WITH IT, THOUGH. WHEN YOU REDUCE THE TAR IN A  
22 CIGARETTE, BY AND LARGE, YOU REDUCE THE TASTE OF THAT  
23 CIGARETTE.

24 SO IT'S BEEN AN EFFORT OVER THE YEARS THAT  
25 PHILIP MORRIS HAS TRIED TO PRODUCE LOW-TAR CIGARETTES THAT  
26 TASTE GOOD. AND IF YOU PRODUCE LOW-TAR CIGARETTES THAT DON'T  
27 TASTE GOOD, THAT NOBODY BUYS, THEY DON'T DO MUCH GOOD AS FAR  
28 AS REDUCING THE OVERALL RISK OF SMOKING.

5414

1 Q. SO AS YOU REDUCE THE TAR, IN ADDITION TO  
2 REDUCING THE DELIVERY OF HARMFUL CHEMICALS, DO YOU ALSO  
3 REDUCE IRRITATION IN THE THROAT AND THINGS LIKE THAT?

4 A. YES. AT LOW TAR, IT'S A MUCH Milder SMOKE.

5 AND AS YOU REDUCE THE TAR, IT REDUCES THE TASTE.

6 Q. OR REDUCES THE FLAVOR AS WELL?  
7 A. YES.  
8 Q. I NOTICE AS YOU LOOK AT THE BOARD, THE TAR LINE  
9 AND THE NICOTINE LINE SEEMS TO BE GOING DOWN. AND TO THE  
10 EXTENT THAT THERE ARE A COUPLE OF UPTICKS, THEY SEEM TO GO UP  
11 TOGETHER.  
12 IS THAT COINCIDENTAL?  
13 A. NO. AS YOU REDUCE -- WHEN YOU REDUCE THE TAR,  
14 YOU ALSO REDUCE THE NICOTINE, BECAUSE THE NICOTINE AND THE  
15 TAR BOTH COME FROM THE BURNING OF TOBACCO.  
16 Q. OKAY.  
17 WE CAN TAKE OFF THE CHART. THE BRIGHT LIGHT IN  
18 YOUR FACE.  
19 JUST ONE OTHER QUESTION BEFORE WE TALK ABOUT  
20 THE WAYS THAT YOU WILL REDUCE TAR AND NICOTINE.  
21 JUST TO BE CLEAR. YOUR PH.D. IS IN ANALYTICAL  
22 CHEMISTRY; IS THAT RIGHT?  
23 A. YES, THAT'S RIGHT.  
24 Q. DR. CARCHMAN WHO TESTIFIED EARLIER IN THE CASE  
25 IS TRAINED IN PHARMACOLOGY AND TOXICOLOGY; IS THAT RIGHT?  
26 A. THAT'S RIGHT.  
27 Q. AND WHAT'S YOUR UNDERSTANDING OF THE DIFFERENCE  
28 BETWEEN YOUR EXPERTISE AND HIS EXPERTISE?  
5415  
1 A. IT'S A BIG DIFFERENCE.  
2 Q. OKAY.  
3 A. HE'S IN THE AREA OF BIOLOGY, AND I'M IN THE  
4 AREA OF CHEMISTRY. HIS AREA OF SCIENCE INVOLVES TESTING THAT  
5 MY AREA OF SCIENCE DOESN'T. SO WE TEND TO SUPPORT EACH OTHER  
6 IN OUR DISCIPLINES.  
7 Q. SO YOU --  
8 A. I MAKE MEASUREMENTS OF CHEMICALS IN GENERAL.  
9 Q. AND YOUR FOCUS HAS BEEN ON DEVELOPING THE  
10 PRODUCTS; IS THAT RIGHT?  
11 A. THAT'S CORRECT, YES.  
12 Q. AND WHILE YOU HAVE A GENERAL UNDERSTANDING OF  
13 EFFECTS OF THOSE PRODUCTS, YOU'RE NOT AN EXPERT IN  
14 EPIDEMIOLOGY OR PHARMACOLOGY OR TOXICOLOGY?  
15 A. NOWHERE CLOSE.  
16 Q. YOU'RE THE GUY WHO BUILDS IT?  
17 A. THAT'S RIGHT.  
18 Q. LET'S TURN TO THE CHART.  
19 AND COULD YOU EXPLAIN TO THE JURY WHAT THOSE  
20 VARIOUS METHODS ARE OF REDUCING THE TAR AND NICOTINE.  
21 IS IT EASY TO DO JUST REDO THE TAR AND NICOTINE  
22 OR IS IT SOMETHING THAT TOOK A LOT OF TIME AND EFFORT?  
23 A. TOOK A LOT OF TIME AND EFFORT. A LOT OF PEOPLE  
24 PUT A LOT OF TIME IN TO GET TO WHERE WE ARE TODAY.  
25 AND CAN I JUST SORT OF GO THROUGH THESE  
26 QUICKLY?  
27 Q. PLEASE.  
28 A. THE FIRST ONE IS FILTRATION.  
5416  
1 TODAY, PRACTICALLY ALL CIGARETTES THAT ARE SOLD  
2 IN THE MARKETPLACE HAVE CELLULOSE ACETATE FILTERS ON THEM.  
3 AND THE CELLULOSE ACETATE FILTER WAS DEVELOPED IN THE EARLY  
4 '50'S -- EARLY TO MID '50'S. AND WHAT IT DOES IS CAPTURE THE  
5 SMOKE PARTICLES OUT OF THE SMOKE STREAM SO THE SMOKE DOESN'T  
6 GET INTO THE SMOKER'S MOUTH AND INHALED BY THE SMOKER.  
7 SO THAT'S ONE OF THE BIG TECHNIQUES THAT'S  
8 USED -- IT'S BEEN A TREMENDOUS MOVE, CELLULOSE ACETATE  
9 FILTERS, OVER THE YEARS. I'LL TALK ABOUT THAT IN A MINUTE, I  
10 GUESS.

11 ANOTHER AREA IS THE PAPER. THE PAPER THAT  
12 WRAPS THE CIGARETTE, THERE HAS BEEN SOME CONSIDERABLE  
13 IMPROVEMENT IN THAT, TOO. AND THE IMPROVEMENT THERE IS TO  
14 INCREASE THE POROSITY OR THE PERMEABILITY OF THAT PAPER.  
15 Q. WHAT DO YOU MEAN BY "PERMEABILITY" OR  
16 "POROSITY"?  
17 A. THE PERMEABILITY IS THE ABILITY OF THE PAPER TO  
18 ALLOW AIR TO PASS THROUGH IT.  
19 A PIECE OF NOTEBOOK PAPER, FOR EXAMPLE, IS  
20 VERY, VERY LOW PERMEABILITY, HAS VERY LOW PERMEABILITY. A  
21 KLEENEX OR A TISSUE WOULD HAVE A LOT OF PERMEABILITY. YOU  
22 COULD BREATHE AIR THROUGH THAT.  
23 AND THE REASON IT'S IMPORTANT TO HAVE -- WELL,  
24 YOU COULDN'T USE TISSUE PAPER ON CIGARETTES BECAUSE IT WOULD  
25 COME APART. SO YOU HAVE TO HAVE STRONG PAPER TO GO AROUND  
26 THE TOBACCO AND HOLD IT TOGETHER TO SURVIVE THE  
27 MANUFACTURING.  
28 THE PURPOSE OF THE PAPER IS TO ALLOW THE  
5417

1 CIGARETTE TO BREATHE WHEN YOU PUFF ON IT. IT ALLOWS THE  
2 NOXIOUS GASES -- SOME OF THE NOXIOUS GASES THAT ARE IN THE  
3 SMOKE STREAM TO GET OUT OF THE SMOKE STREAM. AND IT ALSO  
4 ADDS SOME AIR TO THE CIGARETTE TO DILUTE THE SMOKE SO YOU  
5 DON'T GET THE FULL AMOUNT OF SMOKE THAT'S COME FROM THE  
6 TOBACCO. SO THAT'S AN AREA THAT ALLOWED US TO REDUCE THE TAR  
7 AND NICOTINE IN THE CIGARETTE.  
8 THE NEXT ADVANCE WAS AN AREA OF VENTILATION.  
9 VENTILATION OF THE FILTER. ADDING MORE CHANCES FOR THE SMOKE  
10 TO BE DILUTED WITH AIR. AND IT REALLY IS -- THAT'S THE HOLES  
11 IN THE FILTER. AND RATHER THAN PULLING SMOKE FROM THE COLD  
12 BACK THROUGH THE TOBACCO, YOU PULL SOME AIR INTO THE SIDE OF  
13 THE CIGARETTE. SO THAT DILUTES THE SMOKE AND REDUCES THE  
14 AMOUNT OF TAR AND NICOTINE THAT'S IN THERE, TOO.  
15 ANOTHER AREA OF TECHNOLOGY THAT'S OCCURRED OVER  
16 THE YEARS IS EXPANDED TOBACCO. AND YOU CAN THINK ABOUT  
17 EXPANDED TOBACCO LIKE YOU THINK ABOUT POPCORN OR PUFFED RICE  
18 OR PUFFED WHEAT. IF YOU HAVE LESS TOBACCO IN THE CIGARETTE  
19 ROD, THERE'S LESS SMOKE TO BE GENERATED.  
20 SO THAT ALSO REDUCES THE TAR AND NICOTINE FROM  
21 THE CIGARETTE. AND IN A GENERAL SENSE, THAT'S THE FOUR MAJOR  
22 TECHNIQUES THAT WE'VE USED TO REDUCE THE TAR AND NICOTINE IN  
23 OUR CIGARETTES OVER THE YEARS.  
24 Q. OKAY. AND EACH OF THEM HAS BEEN DEVELOPED AND  
25 HAS BEEN APPROVED OVER TIME?  
26 A. YES. AND THEY'RE STILL BEING WORKED ON.  
27 Q. LET'S TALK FOR A COUPLE OF MINUTES ABOUT SOME  
28 OF THE SPECIFICS. AND I'M GOING TO SHOW SOME GRAPHICS ON THE  
5418

1 SCREEN, AND YOU'RE WELCOME TO STAY THERE OR SIT DOWN.  
2 A. WHATEVER YOU WANT ME TO DO. I DON'T CARE.  
3 Q. WHATEVER IS YOUR WISH.  
4 WHY DON'T I MOVE THAT OVER A LITTLE BIT SO YOU  
5 HAVE A LITTLE BIT MORE ROOM.  
6 A. I CAN DO THAT. MAYBE I CAN'T DO THAT.  
7 Q. GOT IT. OKAY.  
8 IF YOU COULD, PUT UP NO. 3, PLEASE, WHICH IS  
9 11097.  
10  
11 (I.D. 11097 - DEMONSTRATIVE)  
12  
13 Q. BY MR. LEITER: WHAT DOES THAT SHOW?  
14 A. IT SHOWS SOME OF THE TECHNIQUES THAT HAVE BEEN  
15 USED TO IMPROVE THE FILTERS OVER THE YEARS.

16 Q. OKAY. CAN YOU DESCRIBE THEM BRIEFLY FOR US?

17 A. SURE. WELL, ONE IS PRETTY OBVIOUS. IF YOU  
18 HAVE A SHORT FILTER ON A CIGARETTE, THEN WE WANTED A LONGER  
19 FILTER, BUT IT WASN'T REALLY THAT EASY TO ACCOMPLISH BECAUSE  
20 EARLY ON, THESE FILTERS -- FILTER LENGTH HAD A LOT OF  
21 RESISTANCE TO DRAW. IT WAS HARD TO DRAW THROUGH. SO MAKING  
22 IT LONGER WOULD MAKE IT VERY DIFFICULT FOR SOMEBODY TO SMOKE  
23 IT. AND IF YOU MAKE IT DIFFICULT FOR SOMEBODY TO SMOKE IT,  
24 YOU'RE NOT GOING TO BUY THEM, SO IT WOULDN'T DO MUCH GOOD.  
25 BUT OVER THE YEARS, WE WERE ABLE TO LENGTHEN THE FILTER AND  
26 STILL HAVE IT BE A SMOKABLE THING.  
27 ANOTHER IMPROVEMENT IS IN THE SHAPE OF THE  
28 LITTLE FIBERS THAT ARE IN THE FILTER. THE SHAPE ORIGINALLY  
5419

1 WAS JUST A CYLINDER. BUT IT WAS FOUND OUT, OVER THE YEARS,  
2 IF THOSE FIBERS ARE NOT CYLINDERS BUT HAVE SHAPE TO THEM --  
3 AND NOW, THEY'RE LITTLE Y-SHAPED FIBERS -- THEY CAPTURE MORE  
4 SMOKE PARTICLES. SO THAT WAS ANOTHER ADVANCE THAT WAS MADE.  
5 WE WORKED VERY CLOSELY WITH OUR -- WHAT WE CALL  
6 OUR TOW, T-O-W, MANUFACTURERS. THAT'S THE BIG LONG STRAND OF  
7 CELLULOUS ACETATE THAT'S MADE UP INTO FILTERS. THAT'S MADE  
8 BY TWO COMPANIES; PRIMARILY, EASTMAN COMPANY AND  
9 HERSCH CELLANESE MAKES THE CELLULOUS ACETATE MATERIALS FOR  
10 OUR FILTERS.  
11 OVER THE YEARS, THEY'VE COME UP WITH TECHNIQUES  
12 TO BETTER CRIMP THESE FIBERS, AND IF YOU CRIMP THEM PROPERLY,  
13 THEY WILL HOLD MORE OR CAPTURE MORE SMOKE PARTICLES.  
14 SO THERE ARE A NUMBER OF NOT SO OBVIOUS  
15 IMPROVEMENTS THAT WERE MADE IN THE LITTLE FIBERS.  
16 THE STRUCTURE OF THE CIGARETTE FILTER IS ALSO  
17 IMPORTANT. A MATERIAL THAT IS A VERY GOOD FILTER IS PAPER.  
18 CREPE PAPER -- BASIC, GOOD CREPE PAPER IS A GOOD FILTER FOR  
19 SMOKE PARTICLES, BUT IT TURNS OUT IT DOESN'T TASTE GOOD.  
20 PHILIP MORRIS AND SOME OF OUR SUPPLIERS WORKED  
21 TOGETHER TO COME UP WITH A CIGARETTE DESIGN -- A FILTER  
22 DESIGN THAT WOULD ALLOW US TO USE WHAT WE CALL A PLUG OF  
23 PAPER WITHIN A SHEATH OF CELLULOUS ACETATE THAT ALLOWS US TO  
24 MAINTAIN THE TASTE PROPERTIES OF CELLULOUS ACETATE AND  
25 ACHIEVE SOME OF THE -- OR ACHIEVE THE FILTRATION  
26 EFFICIENCIES, IF YOU WILL, OF THE PAPER FILTER. WE USE THAT  
27 IN ONE OF OUR PRODUCTS.  
28 AND THE FILTER DENSITY. AGAIN, PACKING MORE OF  
5420

1 THESE LITTLE FIBERS INTO THE SAME FILTER INCREASES THE  
2 EFFICIENCY. SORT OF LIKE LENGTHENING THE FILTER.

3 Q. NOW, THE FILTERS FILTER OUT PARTICLES THAT  
4 INCLUDE SOME OF THE BAD CHEMICALS THAT WOULD GET TO A SMOKER,  
5 AND THAT'S ONE WAY OF REDUCING TAR DELIVERY; IS THAT RIGHT?

6 A. CORRECT, YES.

7 Q. YOU'VE DESCRIBED DIFFERENT TECHNOLOGIES IN THE  
8 FILTER THAT HAVE DEVELOPED OVER TIME. AND YOU ALSO MENTIONED  
9 THAT THE PUBLIC HEALTH COMMUNITY STARTED ADVOCATING LOWER TAR  
10 BACK IN, WHAT, THE 1950'S?

11 A. YES.

12 Q. ARE YOU DESCRIBING JUST TECHNOLOGIES THAT, BACK  
13 IN THE 1950'S, WHEN THE PUBLIC HEALTH COMMUNITY SAID, TOBACCO  
14 COMPANIES, GO LOWER TAR, PHILIP MORRIS SAID, OH SURE, WE'LL  
15 DO ALL OF THIS STUFF?

16 A. NO. THESE ARE DEVELOPMENTS THAT ARE STILL  
17 OCCURRING. THE SHAPE OF THE FIBERS, THE SIZE OF THE FIBERS,  
18 OUR ABILITY TO PACK MORE OF THESE FIBERS INTO THE SAME FILTER  
19 IS CONTINUING TO IMPROVE. AND AS I SAID BEFORE, WE WORK WITH  
20 THE MANUFACTURERS OF THE RAW MATERIAL TO SEARCH FOR PROGRAMS

21 WITH THEM AND TRYING TO IMPROVE THIS AS WE GO ALONG.

22 Q. ON JUST THE FILTER DESIGN ITSELF.

23 IT'S BEEN AN ONGOING PROJECT FOR MANY, MANY,

24 MANY YEARS?

25 A. AND IT'S STILL GOING ON. I'M STILL WORKING ON

26 THIS, YES.

27 Q. DOES PHILIP MORRIS PUT THE SAME FILTER ON ALL

28 OF ITS CIGARETTES?

5421

1 A. NO.

2 Q. WHY NOT?

3 A. WE USE DIFFERENT FILTERS AND DIFFERENT FILTER

4 DESIGNS FOR DIFFERENT CIGARETTES BECAUSE WE HAVE A RANGE OF

5 TAR AND NICOTINE DELIVERIES FROM THE CIGARETTES.

6 Q. WHY NOT JUST PUT ALL THE BEST THINGS YOU CAN

7 THINK ABOUT INTO THE FILTER ON EVERY, SINGLE CIGARETTE?

8 A. SOME PEOPLE LIKE THE TASTE OF A HIGHER TAR

9 CIGARETTE.

10 Q. AND --

11 A. THEY APPARENTLY LIKE THE TASTE OF A HIGHER TAR

12 CIGARETTE. THAT'S WHAT THEY CHOOSE TO BUY.

13 Q. YOU MENTIONED THAT PHILIP MORRIS OFFERS

14 CIGARETTES WITH A RANGE OF TAR DELIVERIES; MERIT ULTIMA, FOR

15 EXAMPLE, BEING AT THE BOTTOM.

16 A. MERIT ULTIMA HAS THIS PAPER FILTER, YES.

17 Q. DIFFERENT CIGARETTES HAVE DIFFERENT FILTERS

18 BECAUSE THEY DELIVER DIFFERENT TASTES?

19 A. THAT'S CORRECT.

20 Q. AND CONSEQUENTLY, DIFFERENT TAR LEVELS?

21 A. THAT'S CORRECT.

22 Q. OKAY. BY THE WAY, WHEN THE AVERAGE TAR LEVEL

23 YOU MENTIONED CAME DOWN TO ABOUT 12 OR SO, WHY DOESN'T IT

24 COME DOWN TO 1 OR 0?

25 A. IT WOULD IF PEOPLE CHOSE TO BUY THOSE. BUT

26 CURRENTLY, AS I SAID BEFORE, THAT'S THE SALES-WEIGHTED

27 AVERAGE. IF THEY BOUGHT MORE AND MORE OF THE LOWER TAR

28 CIGARETTES -- AND HOPEFULLY, OVER THE YEARS, THEY WILL. AS

5422

1 WE CAN IMPROVE THE LOWER TAR CIGARETTES, THIS WILL COME ON

2 DOWN.

3 Q. AS YOU CONTINUE TO BE ABLE TO IMPROVE THE TASTE

4 AS YOU BRING THE TAR LEVEL DOWN, PRESUMABLY, MORE PEOPLE WILL

5 SMOKE THEM?

6 A. YES.

7 Q. IF EVERYBODY IN AMERICA SMOKED MERIT ULTIMA,

8 THEN THE AVERAGE TAR DELIVERY WOULD BE MUCH, MUCH LOWER?

9 A. DOWN HERE AT 1.

10 Q. WE'VE TALKED ABOUT POROUS PAPER A LITTLE BIT.

11 WHY DON'T WE MOVE TO FILTER VENTILATION.

12 PUT UP NO. 4, PLEASE, WHICH IS 11098.

13

14 (I.D. 11098 - DEMONSTRATIVE)

15

16 Q. BY MR. LEITER: WHAT DOES THAT SHOW?

17 A. IT SHOWS -- THIS DOES A LITTLE BIT BETTER JOB

18 OF EXPLAINING ABOUT VENTILATION THAN I DID BEFORE, I THINK.

19 Q. OKAY.

20 A. WHAT THIS IS IS A CIGARETTE, AND THE TOBACCO

21 COLUMN IS DOWN THIS WAY. SO THERE'S A VENT HOLE DOWN HERE

22 GENERATING SMOKE.

23 AN AS THE PERSON PUFFS ON THE CIGARETTE, THEY

24 PULL AIR THROUGH THE TOBACCO COLUMN INTO THE FILTER, AND THE

25 FILTER -- THIS IS SUPPOSED TO DEPICT THE FILTER TAKING OUT



26 SOME OF THE SMOKE, WHICH IT DOES. SO IT TAKES OUT SOME OF  
27 THE SMOKE AS IT MOVES DOWN TO THE VENT HOLES. THE VENT HOLES  
28 THEN ALLOW AIR TO COME IN AND DILUTE THE SMOKE BEFORE IT GETS  
5423

1 INTO THE SMOKER'S MOUTH.

2 THERE'S SOME INTERESTING PHYSICS -- I WON'T DO  
3 A PHYSICS LESSON.

4 Q. I'M ALSO A LITTLE NERVOUS WHEN SOMEBODY SAYS  
5 THERE'S SOME INTERESTING PHYSICS.

6 DESCRIBE IT FOR US, PLEASE?

7 A. I'M GOING TO TALK X-RAYS FOR A FEW MINUTES.

8 BUT I PROMISE NOT TO DO THAT.

9 IT'S IMPORTANT WHERE THESE HOLES ARE PLACED FOR  
10 A COUPLE OF REASONS. ONE IS A PHYSICS REASON. THE PHYSICS  
11 REASON FOR IT IS THAT YOU WANT TO PLACE THESE HOLES AS CLOSE  
12 TO THIS END AS POSSIBLE.

13 Q. AS CLOSE AS TO THE END WHERE?

14 A. WHERE THE MOUTH IS.

15 Q. WHERE THE MOUTH IS?

16 A. AS POSSIBLE. BECAUSE YOU WANT THE SMOKE TO GO  
17 THROUGH THE FILTER AS SLOW AS POSSIBLE.  
18 THE REASON YOU WANT IT TO GO THROUGH THE FILTER  
19 AS SLOW AS POSSIBLE IS BECAUSE THE FIBERS ARE MUCH MORE  
20 EFFICIENT AT CAPTURING SMOKE PARTICLES WHEN A STREAM IS NOT  
21 MOVING THROUGH REAL FAST.

22 SO WE PUT IT AS CLOSE TO THE MOUTH END AS  
23 POSSIBLE WITH ONE CONSIDERATION. AND THAT CONSIDERATION IS,  
24 HOW FAR DO PEOPLE NORMALLY PUT IT IN THEIR MOUTH?  
25 WELL, WE DID SOME STUDIES AND FOUND THAT MOST  
26 PEOPLE DON'T PUT IT IN THEIR MOUTH MORE THAN ABOUT  
27 10 MILLIMETERS. SO WE PUT ALL OF OUR HOLES AT 12 MILLIMETERS  
28 FROM THE MOUTH IN, BECAUSE -- THAT'S THE INTERESTING PHYSICS  
5424

1 OF IT, I GUESS.

2 Q. AND -- OKAY. AND PHILIP MORRIS TRIES TO PUT  
3 BOTH THE VENTILATION HOLES WHERE THEY'RE GOING TO BE THE MOST  
4 EFFICIENT --

5 A. RIGHT.

6 Q. -- BUT WHERE THEY'RE NOT GOING TO BE COVERED UP  
7 BY SOMEBODY'S LIPS?

8 A. THAT'S CORRECT.

9 Q. WHAT ABOUT FINGERS COVERING THEM UP?

10 A. IN GENERAL, IT'S POSSIBLE FOR THE FINGERS TO  
11 COVER PART OF THEM UP. BUT IN GENERAL, THE WAY PEOPLE WOULD  
12 HOLD A CIGARETTE, THE HOLES WOULD BE BETWEEN THE FINGERS AND  
13 THE LIPS, IN GENERAL TERMS.

14 Q. DID PHILIP MORRIS TRY TO PUT THE HOLES IN A  
15 PLACE WHERE LIPS OR FINGERS WOULD COVER THEM UP?

16 A. TRY TO PUT THEM WHERE THEY WOULD NOT COVER THEM  
17 UP.

18 Q. BY THE WAY, IF YOU COVER UP -- IF YOU DO HAPPEN  
19 TO INADVERTENTLY, OR EVEN ON PURPOSE, COVER UP SOME OF THE  
20 VENT HOLES WITH THE FINGERS, WHAT HAPPENS?

21 A. THAT IS INTERESTING PHYSICS.

22 IF YOU COVER UP HALF THE HOLES, YOU DON'T  
23 REMOVE HALF THE VENTILATION. THE OTHER HOLES, IN SIMPLISTIC  
24 TERMS, TAKE MORE AIR IN. THEY DON'T TAKE -- IT DOESN'T TAKE  
25 AS MUCH AS IT DID WITH IT BEING COMPLETELY OPEN, BUT IT TAKES  
26 IN MORE AIR THAN IT WOULD JUST BY SIMPLY BLOCKING HALF THE  
27 HOLES.

28 Q. SO SOMEBODY WHO INADVERTENTLY PUTS THEIR  
5425

1 FINGERS OVER SOME OF THE VENT HOLES ISN'T TOTALLY DEFEATING

2 THE PURPOSE OF THE VENT HOLES?  
3 A. NO, THEY'RE NOT.  
4 Q. ALTHOUGH THEY MIGHT BE CUTTING IT DOWN?  
5 A. YES. THEY WOULD CUT IT DOWN TO SOME EXTENT.  
6 Q. OKAY.  
7 LET'S TAKE A LOOK AT NO. 5, WHICH IS 11099.  
8  
9 (I.D. 11099 - DEMONSTRATIVE)  
10  
11 Q. BY MR. LEITER: WHAT IS THAT?  
12 A. IT'S A PICTURE OF TECHNIQUES THAT WOULD HAVE  
13 BEEN USED OVER THE YEARS FOR PRODUCING THE VENTILATION HOLES  
14 IN THE FILTER.  
15 STARTING WITH THE EARLIER TECHNIQUES.  
16 MECHANICAL PERFORATIONS. AND THAT REALLY WAS  
17 JUST PINS STICKING HOLES IN THE END OF THE FILTER. SO THAT  
18 WAS THE EARLIEST TECHNOLOGY THAT WE HAD FOR MAKING VENT  
19 HOLES, HOLES IN THE FILTER.  
20 LATER ON, PHILIP MORRIS DEVELOPED A TECHNIQUE  
21 CALLED ELECTROSTATIC PERFORATION. AND ELECTROSTATIC  
22 PERFORATION USES ELECTRIC SPARKS, SORT OF LIKE SPARK PLUGS OR  
23 SPARKS FROM THAT TO BURN HOLES IN PAPER. AND THESE ARE VERY  
24 SMALL HOLES, BUT THEY LEAVE LITTLE BURN MARKS. SO WE  
25 COULDN'T USE THEM ON WHITE PAPER TIPS BECAUSE THE CONSUMER  
26 DIDN'T LIKE TO SEE THE LITTLE HOLES IN THE TIPS. THEY  
27 COMPLAINED ABOUT THAT.  
28 AND FINALLY, ONE OF OUR DEVELOPMENTS AT  
5426  
1 PHILIP MORRIS WAS TO DEVELOP THE LASER -- THE LASER  
2 PERFORATION TECHNIQUES FOR MAKING VERY UNIFORM, VERY HIGHLY  
3 CONTROLLED HOLES IN THE FILTERS TO ALLOW THE VENTILATION TO  
4 OCCUR.  
5 Q. DID THE SIZE OF THE HOLES DIFFER FROM ONE  
6 PHILIP MORRIS BRAND TO THE OTHER?  
7 A. THE SIZE AND THE NUMBER DELIVERED, DEPENDING  
8 UPON HOW MUCH VENTILATION THE CIGARETTE HAS.  
9 Q. SO AGAIN, A MERIT ULTIMA WAS PROBABLY GOING TO  
10 HAVE THE BIGGEST HOLES AND THE MOST HOLES?  
11 A. YES. ALL OTHER THINGS BEING EQUAL, THE MERIT  
12 ULTIMA HAS THE PAPER FILTER ON IT, SO IT'S A VERY HIGHLY  
13 EFFICIENT FILTER, BUT IT WOULD HAVE, ALSO, MORE VENT HOLES  
14 THAN SOMETHING ELSE AT A HIGHER DELIVERY.  
15 Q. LET'S TURN TO EXPANDED TOBACCO AND TAKE A LOOK  
16 AT NO. 6, WHICH IS 11100.  
17  
18 (I.D. 11100 - DEMONSTRATIVE)  
19  
20 Q. BY MR. LEITER: WHAT IS THAT?  
21 A. IT'S A SIMPLE PICTURE, I GUESS, OF WHAT YOU CAN  
22 ACCOMPLISH WITH EXPANDED TOBACCO, THE PUFFED WHEAT, PUFFED  
23 RICE, POPCORN.  
24 WE HAVE A PROCESS THAT WE'VE DEVELOPED USING  
25 CARBON DIOXIDE TO IMPREGNATE THE TOBACCO. SUBSEQUENT TO  
26 THAT -- AND IT'S DONE UNDER HIGH PRESSURE. SUBSEQUENT TO  
27 THAT, YOU HEAT IT QUICKLY, AND THE CARBON DIOXIDE WILL EXPAND  
28 CAUSING THE TOBACCO TO SWELL UP, TO GROW BACK TO THE SIZE IT  
5427  
1 WAS IN THE GREEN-LEAF STATE BEFORE IT SHRUNK DOWN IN THE  
2 DRYING PROCESS.  
3 AND WE USE THAT TO VARYING DEGREES IN OUR  
4 CIGARETTES TO REDUCE THE AMOUNT OF TOBACCO. AND AS I SAID  
5 BEFORE, IF YOU REDUCE THE AMOUNT OF TOBACCO, THERE'S LESS  
6 TOBACCO TO BURN AND, THEREFORE, LESS TAR AND NICOTINE TO BE

7 GENERATED.  
8 Q. SO IF YOU CAN PUT LESS TOBACCO IN A CIGARETTE  
9 OF THE SAME SIZE, THERE'S GOING TO BE LESS TAR THAT CAN  
10 POSSIBLY BE IN THAT CIGARETTE --  
11 A. THAT'S TRUE.  
12 Q. -- RIGHT?  
13 FAIR TO --  
14 A. ACTUALLY, THERE'S NO TAR IN THE CIGARETTE. THE  
15 TAR --  
16 Q. EXCUSE ME. LESS TAR --  
17 A. -- GENERATED.  
18 Q. -- CREATED?  
19 A. THAT'S RIGHT.  
20 Q. WHEN THE CIGARETTE IS SMOKED, BECAUSE THERE'S  
21 LESS TOBACCO TO BEGIN WITH?  
22 A. RIGHT.  
23 Q. OKAY. NOW, WE'VE TALKED ABOUT THESE VARIOUS  
24 TECHNIQUES. OVERALL, IS IT THESE TECHNIQUES AND OTHERS THAT  
25 PHILIP MORRIS HAS DEVELOPED THAT HAVE ALLOWED AVERAGE TAR AND  
26 NICOTINE DELIVERIES TO DECREASE SO MUCH OVER THE YEARS?  
27 A. YES.  
28 MR. LEITER: NOW, YOU CAN TAKE THAT ONE OFF THE  
5428  
1 SCREEN, PLEASE. THANKS.  
2 Q. NOW, BEFORE I ASK YOU TO SIT DOWN, DR. WHIDBY,  
3 I UNDERSTAND THAT YOU HAVE GIVEN ME SOME PACKS OF CIGARETTES,  
4 AND WHAT IS IT THAT YOU'D LIKE TO SHOW THE JURY WITH THESE  
5 VARIOUS PACKS OF CIGARETTES?  
6 A. I'D LIKE TO ATTEMPT TO SHOW THEM IN THE  
7 CIGARETTES THE TECHNOLOGIES THAT I JUST DISCUSSED HERE, I  
8 GUESS.  
9 Q. OKAY.  
10 A. AND HOW IT'S CHANGED OVER THE YEARS.  
11 Q. OKAY. AND I DO KNOW THAT WE HAVE SMUGGLED INTO  
12 THE COURTROOM A RAZOR BLADE TO ALLOW YOU TO CUT OPEN THE  
13 CIGARETTES AND SHOW THEM TO THE JURY.  
14 A. I DIDN'T DO THAT.  
15 MR. LEITER: IS IT POSSIBLE FOR DR. WHIDBY TO APPROACH  
16 THE BAR?  
17 THE COURT: YES. IF YOU WOULD ACCOMPANY HIM.  
18 Q. BY MR. LEITER: MAYBE IF YOU COULD COME RIGHT  
19 HERE AND SHOW THE JURY AND, HOPEFULLY, PEOPLE WILL BE ABLE TO  
20 SEE HOW THESE VARIOUS TECHNIQUES ARE MANIFEST IN THE  
21 CIGARETTES THEMSELVES?  
22 A. I'LL BRING THEM AROUND.  
23 WHAT I'M GOING TO TRY TO DO IS SORT OF SHOW  
24 YOU, FROM THE MID '50'S, SORT OF THE TECHNOLOGY THAT WAS IN  
25 THE CIGARETTES AT THAT TIME AND SORT OF SHOW HOW IT WAS  
26 DEVELOPED OVER THE YEARS AND HOW IT'S INCLUDED.  
27 SO THE ORDER WE WOULD LOOK AT THESE WOULD BE,  
28 PHILIP MORRIS COMMANDER, ALTHOUGH IT'S NOT A 1955 CIGARETTE,  
5429  
1 IT'S REPRESENTATIVE OF THAT. IT DOESN'T HAVE A FILTER ON IT.  
2 DOES HAVE SOME EXPANDED TOBACCO IN IT. SO EVEN THESE HAVE  
3 BEEN REDUCED IN TAR AND NICOTINES FROM THE 50'S UNTIL TODAY.  
4 BUT THAT'S WHAT I'VE GOT.  
5 GOING FROM THE NONFILTER TO THE MARLBORO RED,  
6 WHICH IS BETWEEN 15 AND 16 MILLIGRAMS OF TAR; THE MARLBORO  
7 LIGHTS, WHICH IS AROUND 10 OR 11 MILLIGRAMS OF TAR; AND THE  
8 MERIT ULTIMA, WHICH IS AROUND 1 MILLIGRAM OF TAR.  
9 SO WHERE IS THE RAZOR BLADE?  
10 IN MY POCKET?  
11 Q. I THINK YOU HAVE IT.

12 A. SO WITHIN THIS CIGARETTE, IF I CUT IT OPEN --  
13 THIS, IN THE '50'S, WOULD NOT BE POROUS PAPER, BUT IT WOULD  
14 BE PAPER THAT WOULD BE PRETTY NONPOROUS. IT WOULD BE STRONG.  
15 PEOPLE COULD GET THROUGH THE MAKING MACHINES, BUT IT WOULDN'T  
16 HAVE THE POROSITY THAT IT HAS NOW. THIS PAPER DOES ALLOW --  
17 IT DOES BREATHE WHEN SMOKED. SO THIS IS WHAT WE WOULD HAVE  
18 HAD IN THE '50'S.  
19 THE TOBACCO IN THE '50'S WOULD HAVE BEEN ALL  
20 TOBACCO WITH NO EXPANDED TOBACCO IN IT. SO THIS WOULD NOT BE  
21 TOTALLY REPRESENTATIVE OF THAT.  
22 BUT LET ME NOW MOVE TO THE NEXT CIGARETTE, THE  
23 MARLBORO. AND THE MARLBORO, AS YOU NOTICE, IS A LITTLE BIT  
24 LONGER THAN THAT. IT HAS A FILTER ON IT. I'LL CUT THIS ONE  
25 OPEN, TOO. AND IT DOES HAVE SOME VENTILATION IN THE FILTER,  
26 BUT NOT AS MUCH AS THESE OTHERS. BUT IT DOES HAVE SOME IN  
27 THERE.  
28 I'LL CUT THAT OPEN. FIRST THING WE DO IS TEAR  
5430

1 THE FILTER OFF AND LOOK AT THE FILTER.  
2 THE FILTER IS, AS YOU HAVE NOTICED, MADE UP OF  
3 SMALL FIBERS STUCK TOGETHER. THESE FIBERS ARE CELLULOUS  
4 ACETATE. AND THEY'RE WELDED TOGETHER WITH A MATERIAL CALLED  
5 TRIACETIN. SOMETHING I FORGOT TO TELL YOU ABOUT WHEN I WAS  
6 TALKING ABOUT FILTERS BEFORE.  
7 TRIACETIN IS WHAT IS CALLED THE PLASTICIZER,  
8 AND THAT DOES WELD THESE TINY FIBERS TOGETHER AND ALLOW  
9 YOU TO MAKE A PLUG OUT OF IT. BUT AS IT TURNS OUT,  
10 TRIACETIN IS ALSO A VERY GOOD ABSORBER FOR VOLATILE  
11 NITROSAMINES AND PHENOLS. SO THIS FILTER TAKES OUT  
12 THE MAJORITY OF THE VOLATILE NITROSAMINES AND THE PHENOLS,  
13 WHEREAS, THE NONFILTERED CIGARETTE, YOU GET THE WHOLE  
14 AMOUNT THERE.  
15 SO THIS IS THE MARLBORO FILTER.  
16 EVERYBODY SORT OF SEE THIS?  
17 AND NOW THIS PAPER FOR THE MARLBORO COMPARED TO  
18 THE COMMANDER, AS I SAID BEFORE, WILL BE MORE POROUS ALLOWING  
19 MORE AIR TO GO THROUGH, THE MORE NOXIOUS CHEMICALS TO GO OUT.  
20 IN ADDITION TO THAT, AGAIN, SORT OF PRETEND  
21 THIS IS THE 1954 TOBACCO. THE MARLBORO HAS IN IT EXPANDED  
22 TOBACCO. AND WHAT WE -- AND PERHAPS I CAN PUT IT ON THE  
23 ELMO.  
24 Q. IT MIGHT BE HELPFUL TO PUT IT ON THE ELMO.  
25 A. I MIGHT WANT TO DO THAT AT THE END HERE SO WE  
26 CAN SEE ALL OF IT, IF THAT'S ALL RIGHT.  
27 Q. OKAY.

28 A. BUT IN THE TOBACCO, IT WILL HAVE EXPANDED  
5431

1 TOBACCO, BIGGER PIECES OF TOBACCO THAT YOU CAN SEE. IT'S NOW  
2 FILLING MORE OF THE VOLUME THAN THE OTHER TOBACCO.  
3 SO IF I NOW MOVE ON TO THE MARLBORO LIGHTS AND  
4 TAKE THAT ONE APART. THE PRIMARY DIFFERENCE BETWEEN MARLBORO  
5 LIGHTS AND THE MARLBORO IS, IT GETS FROM 15 OR 16 MILLIGRAMS  
6 OF TAR DOWN TO 10 OR 11 MILLIGRAMS OF TAR IS TWO-FOLD.  
7 ONE IN THE FILTER LENGTH OF -- YOU'VE GOT A  
8 LONGER FILTER ON IT. AND WE HAVE A LOT MORE VENTILATION.  
9 AND I'LL SHOW THIS ON THE ELMO, TOO, BECAUSE IT'S HARD TO SEE  
10 IN THE FILTER. I'LL ATTEMPT TO SHOW THE VENT HOLES AND WHERE  
11 THEY ARE ON THE ELMO.  
12 SO THAT'S THE MARLBORO LIGHTS. AND IT HAS, AS  
13 YOU CAN SEE, EXPANDED TOBACCO AND BIGGER PIECES OF TOBACCO IN  
14 IT.  
15 NOW, GOING ON TO -- WELL, WE DON'T HAVE THE  
16 ULTIMA. WE HAVE THE ULTRALIGHTS.

17 Q. OKAY. SORRY.  
18 A. AND THIS DOES NOT HAVE THE PAPER CORE  
19 CONCENTRIC FILTER ON IT. IT DOESN'T HAVE THE FILTER I TALKED  
20 ABOUT. IT HAS A CELLULOUS ACETATE FILTER ON IT.  
21 Q. IF YOU GIVE US ONE MINUTE, WE MIGHT --  
22 DO WE --  
23 IF YOU GIVE US ONE SECOND, WE MIGHT HAVE THE  
24 RIGHT PACK HERE.  
25 I'M SORRY. WE DON'T, DR. WHIDBY.  
26 A. OKAY. IT DOES HAVE SOMETHING ELSE ON IT. IT  
27 HAS THE PAPER -- WE TALKED ABOUT A TECHNIQUE THAT -- WE  
28 DIDN'T TALK ABOUT THE PAPER. IT'S AN IMPROVEMENT IN THE  
5432  
1 PAPER THAT IS DIRECTED AT REDUCING THE IGNITION PROPENSITY.  
2 THIS HAS LITTLE BANDS OF PAPER THAT ARE AROUND  
3 THE CIGARETTE OR ARE THICKER THAN THE OTHER PARTS OF THE  
4 CIGARETTE SO THAT WHEN CIGARETTES ARE DROPPED ON UPHOLSTERED  
5 FURNITURE, IT WILL GO OUT IN THE BANDS AND LESS LIKELY TO  
6 CAUSE A FIRE.  
7 LET ME GO AHEAD AND TEAR UP THE MERIT  
8 ULTRALIGHTS RATHER THAN THE MERIT ULTIMA, AND WE'LL LOOK AT  
9 IT. WHAT YOU'LL SEE IS THE FILTER LENGTH FOR THE MERIT  
10 ULTIMA -- MERIT ULTRALIGHTS AND THE MARLBORO LIGHTS ARE THE  
11 SAME. SAME LENGTH. THERE IS A DIFFERENCE IN THE FILTER,  
12 THOUGH. IT DOES HAVE SMALLER FIBERS, AND THEY'RE PACKED  
13 TIGHTER TOGETHER.  
14 IN ADDITION TO THAT, IT HAS MORE VENTILATION  
15 HOLES IN IT THAN DOES THE MARLBORO LIGHTS.  
16 AND LET ME TAKE THESE OVER TO THE ELMO AND SEE  
17 IF WE CAN -- IF I CAN SHOW YOU WHERE THE VENT HOLES ARE.  
18 PUT IT RIGHT ON, AND IT SHOULD SHOW UP.  
19 I WANT TO DO -- THERE WE GO.  
20 Q. IS THAT BETTER?  
21 A. SHOWED IT FOR A SECOND, DIDN'T IT?  
22 LET ME SEE.  
23 Q. THERE WE ARE.  
24 A. SO THIS HAS TWO ROWS OF VENT HOLES ON IT. AND  
25 THOSE VENT HOLES ARE 12 MILLIMETERS FROM THE MOUTH END OF THE  
26 FILTER. THAT'S TRUE IN ALL THE CIGARETTES.  
27 AND WHETHER I CAN SEE THEM IN THIS ONE OR NOT,  
28 SINCE I'VE SORT OF TORN IT APART.  
5433  
1 Q. THIS ONE THAT WAS ON PREVIOUSLY WAS THE MERIT  
2 ULTRALIGHTS?  
3 A. THIS IS THE -- YES. MERIT ULTRALIGHTS.  
4 Q. OKAY.  
5 A. AS I SAID BEFORE -- I THINK IT WON'T MAKE A  
6 LIAR OUT OF ME. THE MERIT HAS MORE HOLES. AND THERE, AS YOU  
7 CAN SEE THERE, THERE ARE BIGGER HOLES THAN THE MARLBORO  
8 LIGHTS. AS WELL AS THE FILTER BEING A LITTLE BIT MORE  
9 EFFICIENT AND MORE EXPANDED TOBACCO IN THE MERIT.  
10 SO THAT'S THE DESIGN TECHNIQUES THAT WE USE TO  
11 REDUCE THE TAR AND NICOTINE IN THE CIGARETTE AND TRYING TO  
12 MAINTAIN A GOOD TASTING CIGARETTE.  
13 LET ME NOW MOVE SOME OF THE TOBACCO HERE.  
14 WOULD THAT BE ALL RIGHT?  
15 Q. THAT WOULD BE FINE.  
16 A. I'VE GOT SOMETHING HERE WE CAN LOOK AT ANYWAY.  
17 YOU SEE THIS PIECE RIGHT HERE?  
18 THAT'S A PIECE OF EXPANDED TOBACCO. AND THE  
19 REST OF IT AROUND IT, THE ONE RIGHT HERE, IS JUST A REGULAR  
20 PIECE OF TOBACCO.  
21 Q. EXPANDED TOBACCO IS THE BIGGER AND LIGHTER

22 COLOR?  
23 A. THE BIGGER AND LIGHTER COLOR, RIGHT.  
24 WHEN YOU EXPAND IT, IT LIGHTENS UP OR CHANGES  
25 ITS COLOR A LITTLE BIT. THAT'S NOT PART OF THE PROCESS, BUT  
26 IT JUST HAPPENS WHEN YOU EXPAND IT.  
27 AND THERE'S OTHER TYPES OF TOBACCO IN HERE. WE  
28 HAVE, FUNDAMENTALLY, THREE TYPES OF TOBACCO; A BRIGHT  
5434  
1 TOBACCO, AN ORIENTAL TOBACCO AND A BURLEY TOBACCO.  
2 Q. OKAY. THANK YOU, DR. WHIDBY.  
3 YOUR HONOR, I WONDER IF THIS WOULD BE A GOOD  
4 TIME TO TAKE OUR BREAK?  
5 THE COURT: THAT'S FINE.  
6 LET'S TAKE OUR BREAK, LADIES AND GENTLEMEN.  
7 SEE YOU AT FIVE PAST 3:00.  
8  
9 (RECESS.)  
10  
11 THE COURT: THANK YOU.  
12 ALL RIGHT. OUR JURY PANEL IS WITH US; OUR  
13 WITNESS IS ON THE STAND.  
14 SIR, YOU UNDERSTAND YOU'RE STILL UNDER OATH.  
15 THE WITNESS: YES, SIR, I DO.  
16 THE COURT: VERY WELL.  
17 MR. LEITER.  
18 MR. LEITER: THANK YOU, YOUR HONOR.  
19 THE COURT: YES, SIR.  
20 Q. BY MR. LEITER: DR. WHIDBY, DURING THE BREAK,  
21 WE ACQUIRED A PACK OF MERIT ULTIMA.  
22 YOU HAD WANTED TO SHOW THE JURY THE FILTER.  
23 WOULD YOU MIND STEPPING DOWN.  
24 A. YES, SIR.  
25 Q. AND WE CAN SHOW THE JURY THE FILTER ON THE  
26 MERIT ULTIMA, AND THEN WE'RE GOING TO MOVE ON TO ANOTHER  
27 SUBJECT.  
28 A. I APOLOGIZE FOR THAT BEFORE.  
5435  
1 YOU CAN SEE THE HOLES. I'LL JUST TEAR IT OFF  
2 STRAIGHTAWAY AND TEAR IT OPEN AND SHOW YOU THE CONSTRUCTION  
3 IN ADDITION TO THIS.  
4 I TALK TOO LOW. I'LL TRY TO TALK LOUDER.  
5 I'LL SHOW YOU THE CONSTRUCTION OF THIS FILTER  
6 VERSUS THE PREVIOUS ONE. I'VE ALREADY PULLED IT OUT. THIS  
7 IS THE PAPER FILTER I WAS TALKING ABOUT WHICH SITS INSIDE  
8 THIS CELLULOUS ACETATE SHEATH. SO IT'S THERE. AND AS I SAID  
9 BEFORE, IT'S CREPE PAPER. AND VERY EFFICIENT, HIGHLY  
10 EFFICIENT PAPER OR FILTER.  
11 AND THE PROBLEM WITH THIS PRIOR TO THE  
12 DEVELOPMENT OF THIS TYPE OF FILTER WAS THAT IT GAVE A PAPER  
13 TASTE, THEY CALL IT. BUT IN COMBINATION WITH CELLULOUS  
14 ACETATE, YOU CAN PRESERVE THE TASTE OF THE CIGARETTE THAT  
15 PEOPLE HAVE GROWN ACCUSTOMED TO, AND IT MAKES IT A MUCH MORE  
16 EFFICIENT FILTER. I THINK THAT'S IT.  
17 Q. THANK YOU, DR. WHIDBY.  
18 IF YOU WOULDN'T MIND RESUMING THE STAND.  
19 I'LL TRY TO CAREFULLY REMOVE THE RAZOR BLADE,  
20 AND I'LL HAND TO IT MR. CARLTON, WHO IS OUR SAFETY OFFICER.  
21 DR. WHIDBY, THE MERIT ULTIMA YOU WERE JUST  
22 SHOWING THE JURY, IS THIS THE LOWEST TAR AND NICOTINE  
23 CIGARETTE THAT PHILIP MORRIS CURRENTLY OFFERS?  
24 A. YES, IT IS.  
25 Q. HAS PHILIP MORRIS EVER DEVELOPED A PRODUCT THAT  
26 HAD A LOWER TAR DELIVERY THAN THE MERIT ULTIMA?

27 A. YES, WE HAVE.

28 Q. AND WHAT WAS THAT PROJECT KNOWN AS?

5436

1 A. IT WAS ORIGINALLY KNOWN AS PROJECT TRINITY. IT

2 WAS SOLD AS CAMBRIDGE CIGARETTES.

3 Q. AND THE JURY'S HEARD A LITTLE BIT ABOUT THE

4 TRINITY/CAMBRIDGE PROJECT, AND I'D LIKE TO TALK TO YOU ABOUT

5 IT FOR A COUPLE OF MINUTES.

6 FIRST OF ALL, WHY WAS THIS PROJECT CALLED THE

7 TRINITY PROJECT?

8 A. IT WAS CALLED TRINITY BECAUSE WE WERE CHARGED

9 WITH DEVELOPING THREE CIGARETTES, THREE VERY LOW-TAR

10 CIGARETTES. HOPEFULLY, LOW-TAR CIGARETTES THAT WOULD HAVE

11 GOOD TASTE, AND WE COULD COMPETE WITH CARLTON AND THE LIKES

12 OF CARLTON ON THE MARKETPLACE.

13 Q. AND THE PRODUCT WAS UNDER DEVELOPMENT IN THE

14 LATE '70'S AND THE EARLY 1980'S; IS THAT ABOUT RIGHT?

15 A. THAT IS CORRECT, YES.

16 Q. OKAY. NOW, YOU MENTIONED THAT THE IDEA WAS TO

17 COMPETE WITH WHAT OTHER PRODUCTS THAT WERE ON THE MARKET?

18 A. I BELIEVE IT WAS CARLTON AND MAYBE NOW THAT WAS

19 ON THE MARKET HAD VERY LOW TAR.

20 Q. AND CARLTON AND NOW ARE NOT MADE BY --

21 A. NO.

22 Q. -- BY PHILIP MORRIS; IS THAT RIGHT?

23 A. NO. MADE BY COMPETITORS.

24 Q. AND THEY WERE AT THE TIME, LATE 1970'S, THE

25 LOWEST TAR PRODUCTS ON THE MARKET; IS THAT CORRECT?

26 A. THAT'S THE BEST OF MY RECOLLECTION, YES.

27 Q. AND PHILIP MORRIS TRIED, WITH THE TRINITY

28 PROJECT, TRIED TO COME UP WITH SOMETHING TO COMPETE?

5437

1 A. THAT'S RIGHT.

2 Q. WHAT WERE THE THREE PRODUCTS THAT WERE UNDER

3 DEVELOPMENT?

4 A. WE HAD A PRODUCT THAT WAS LESS THAN

5 .1 MILLIGRAM, ONE THAT WAS AROUND 1 MILLIGRAM, AND ONE THAT

6 WAS 4 OR 5 MILLIGRAMS.

7 Q. SO THERE WERE THREE DIFFERENT VERSIONS OF THIS

8 PRODUCT. AND YOU MENTIONED THAT WHEN THEY WERE PUT ON THE

9 MARKET, THEY WERE KNOWN AS CAMBRIDGE?

10 A. CORRECT.

11 Q. OKAY. AND PHILIP MORRIS DID PUT THESE OUT ON

12 THE MARKET?

13 A. YES, WE DID.

14 Q. HOW DID PHILIP MORRIS MAKE THAT .1 MILLIGRAM

15 CIGARETTE?

16 A. WE MADE IT BY THE USE OF, AT THE TIME, THE NEW

17 TECHNOLOGY, THAT LASER VENTILATION, A VERY HIGHLY EFFICIENT

18 FILTER AND A LOT OF EXPANDED TOBACCO IN THE CIGARETTE.

19 Q. SO IT USED SOME OF THE TECHNOLOGIES THAT YOU

20 TALKED ABOUT EARLIER THIS AFTERNOON WITH THE JURY?

21 A. YES.

22 Q. OKAY. NOW, YOU MENTIONED THAT THE .1 MILLIGRAM

23 CAMBRIDGE WAS OUT ON THE MARKET.

24 WERE THERE PROBLEMS WITH THE PRODUCT?

25 A. YES.

26 Q. WHAT WERE THE PROBLEMS?

27 A. FIRST OF ALL AT .1 MILLIGRAMS OR LESS, EVEN

28 WITH ALL THE ABILITY OF PHILIP MORRIS TO TRY TO MAKE THAT A

5438

1 TASTY PRODUCT, IT DIDN'T TASTE ALL THAT GOOD BECAUSE, IN

2 GENERAL, THE LOWER THE TAR, THE LESS TASTE. SO, YOU KNOW,

3 TAR SORT OF EQUALS TASTE IN A WAY.  
4 THE OTHER THING ABOUT THE FILTER, IT WAS SO  
5 HIGHLY VENTILATED THAT YOU COULDN'T REALLY PULL MUCH AIR  
6 THROUGH THE CIGARETTE. AND IF YOU CAN'T PULL MUCH AIR  
7 THROUGH THE CIGARETTE, IT'S EXTREMELY HARD TO LIGHT.  
8 IN ADDITION TO THAT, THE FILTER WAS VERY HIGHLY  
9 EFFICIENT, AS I SAID BEFORE. IT WAS EXTREMELY HARD TO DRAW  
10 THROUGH THE FILTER. AND SO IT WAS A DIFFICULT CIGARETTE TO  
11 GET TO LIGHT.  
12 Q. SO HARD TO LIGHT, HARD TO DRAW, AND WHEN YOU  
13 DID DRAW ON IT, VERY LITTLE TASTE?  
14 A. YOU DID GET SOME, BUT VERY LITTLE, YES.  
15 Q. OKAY. NOW, PHILIP MORRIS GAVE A SHOT TO THIS  
16 PRODUCT, RIGHT?  
17 A. YES.  
18 Q. IT PUT IT ON THE MARKET.  
19 HOW DID IT DO?  
20 A. WELL, AFTER A WHILE -- WELL, IT DIDN'T DO VERY  
21 WELL. PEOPLE DIDN'T, BECAUSE OF ALL THE FAULTS, I GUESS,  
22 THEY DIDN'T BUY IT.  
23 Q. HOW LONG WAS THAT VERSION OF THE PRODUCT, THE  
24 .1 TAR PRODUCT, OUT ON THE MARKET?  
25 A. I BELIEVE WE PUT IT ON THE MARKET SOMEWHERE  
26 AROUND 1980, AND I BELIEVE IT STAYED ON THE MARKET UNTIL  
27 ABOUT '86.  
28 Q. SO IT WAS OUT THERE FOR SIX YEARS?  
5439  
1 A. YES.  
2 Q. AND I KNOW YOU'RE NOT AN ADVERTISING PERSON,  
3 BUT JUST FROM YOUR RECOLLECTION, WERE THERE ADS FOR THE  
4 PRODUCT?  
5 A. YES, THERE WERE.  
6 Q. BUT PEOPLE DIDN'T BUY IT, PEOPLE DIDN'T KEEP  
7 USING IT?  
8 A. NO.  
9 Q. NOW, THERE'S BEEN A SUGGESTION HERE THAT THE  
10 CAMBRIDGE -- THAT CAMBRIDGE THAT WE'VE BEEN TALKING ABOUT WAS  
11 REALLY NOT A .1 TAR CIGARETTE, THAT IT WAS REALLY A 0.0 TAR  
12 CIGARETTE.  
13 ARE YOU FAMILIAR WITH THAT ALLEGATION?  
14 A. I'VE HEARD OF THAT, YES.  
15 Q. WAS THERE EVER SUCH A THING AS A 0.0 MILLIGRAM  
16 TAR CAMBRIDGE CIGARETTE?  
17 A. NO, THERE WASN'T.  
18 Q. LET ME SHOW YOU PLAINTIFF'S EXHIBIT 2476, WHICH  
19 THE JURY SAW EARLIER IN THE CASE. IT'S A PHILIP MORRIS  
20 DOCUMENT DATED OCTOBER 19, 1979 TO DISTRIBUTION FROM  
21 T.T. GOODALE.  
22 HAVE YOU SEEN THIS DOCUMENT BEFORE, DR. WHIDBY?  
23 A. YES, I HAVE.  
24 I'M HAVING A HARD TIME SEEING THE DOCUMENT.  
25 I'M SORRY.  
26 Q. BEFORE I PUT IT UP, LET ME SHOW IT TO YOU SO  
27 THAT WE MAKE SURE WE'RE TALKING ABOUT THE SAME DOCUMENT, AND  
28 I'M GOING TO ASK YOU ABOUT THAT.  
5440  
1 A. OKAY.  
2 YES.  
3 Q. OKAY. WHAT IS THAT DOCUMENT?  
4 A. IT'S A DOCUMENT TALKING ABOUT SPECIFICATIONS  
5 FOR SOME OF THE TRINITY PRODUCTS.  
6 Q. NOW, IT'S DATED -- AND I'LL TRY TO ZOOM IN ON  
7 VARIOUS PORTIONS OF IT SO WE CAN SEE IT A LITTLE BETTER.



8 A. EXCUSE ME. COULD WE MOVE THE BOARD THIS --  
9 Q. I'M SORRY. DIFFERENT PROBLEM.  
10 A. THANK YOU, SIR.  
11 Q. BETTER?  
12 A. YES, SIR.  
13 Q. OKAY. DATED OCTOBER 19, 1979.  
14 IS THAT WHEN THE TRINITY OR CAMBRIDGE PROJECT  
15 WAS STILL UNDER DEVELOPMENT?  
16 A. YES.  
17 Q. AND I SEE IT REFERS TO A MARKET PICKUP OF  
18 SEPTEMBER, PRODUCED CARLTON 83 SOFT PACKS AND 100'S WAS  
19 ANALYZED.  
20 CARLTON WAS THE COMPETITION?  
21 A. YES. THAT'S MY UNDERSTANDING, RIGHT.  
22 Q. AND PHILIP MORRIS WAS MEASURING THE TAR  
23 DELIVERY OF CARLTON, THE COMPETITOR'S CIGARETTES, IN THE 83'S  
24 BOX, THE 83'S SOFT PACK, AND THE 100'S SOFT PACK, CORRECT?  
25 A. THAT'S CORRECT.  
26 Q. NOW, THIS NEXT SENTENCE, "THE PHYSICAL  
27 SPECIFICATIONS FOR TRINITY CIGARETTES HAVE BEEN ESTABLISHED,"  
28 WHAT DID THAT MEAN?

5441

1 A. THAT'S THE GOAL THAT TRINITY HAD. AND THEY'RE  
2 OUTLINED BELOW IN THE NEXT LINE -- NEXT AREA DOWN THERE.  
3 THAT'S SORT OF THE TARGET.  
4 Q. OKAY.  
5 A. IN EACH CASE YOU SEE, WE WANTED TO GO BELOW  
6 WHERE CARLTON WAS.  
7 Q. SO THE GOAL WAS TO TRY TO MAKE A PRODUCT THAT  
8 HAD LESS DELIVERY THAN CARLTON IN EACH OF THE THREE  
9 SPECIFICATIONS; IS THAT CORRECT?  
10 A. THAT'S CORRECT.  
11 Q. OKAY. AND SO WHEN WE'RE TALKING ABOUT THE  
12 83'S, THE BOX, THE GOAL WAS TO DEVELOP 0.0 TAR; IS THAT  
13 RIGHT?  
14 A. WELL, TO GET -- TO GET AS LOW AS WE POSSIBLY  
15 COULD.  
16 Q. BY THE WAY, ONCE YOU GET BELOW .1, DOES THE FTC  
17 METHOD ACCURATELY MEASURE -- IS IT SENSITIVE ENOUGH TO  
18 ACTUALLY MEASURE TAR DELIVERIES?  
19 A. AS THEY NORMALLY USE -- IF YOU SMOKE MORE  
20 CIGARETTES, YOU CAN GET GOOD MEASUREMENTS, BUT AS TYPICALLY  
21 RUN, IT'S NOT SENSITIVE AT THAT LEVEL.  
22 Q. OKAY. SO THE GOAL WAS TO TRY TO GET AS LOW AS  
23 POSSIBLE TO 0.0.  
24 DID PHILIP MORRIS EVER ACTUALLY PRODUCE OR WAS  
25 IT ABLE TO ACTUALLY PRODUCE A CAMBRIDGE CIGARETTE THAT  
26 DELIVERED 0.0 ZERO?  
27 A. NO. IT ALWAYS HAD SMOKE THAT CAME OUT OF IT.  
28 WHEN YOU GOT SMOKE, YOU GOT TAR.

5442

1 Q. WAS CAMBRIDGE A SAFE CIGARETTE?  
2 A. NO.  
3 Q. BECAUSE?  
4 A. IT'S GOT TAR AND NICOTINE.  
5 Q. LET ME SHOW YOU DEFENDANTS' EXHIBIT 7435. AND  
6 I'LL ZOOM IT OUT.  
7 ARE YOU FAMILIAR WITH THIS DOCUMENT?  
8 SHOULD I BRING IT UP TO YOU?  
9 A. WOULD YOU, PLEASE.  
10 Q. SURE.  
11 NOW, THE LAST DOCUMENT THAT I SHOWED YOU WAS  
12 DATED OCTOBER 19, 1979.

13 A. RIGHT.  
14 Q. THIS EXHIBIT, DEFENDANTS' 7435, IS DATED  
15 FEBRUARY 1, 1980.  
16 AND ARE YOU FAMILIAR WITH THIS DOCUMENT --  
17 A. YES, I AM.  
18 Q. -- FROM PHILIP MORRIS' FILES?  
19 A. RIGHT.  
20 Q. SO IT'S A LITTLE FURTHER ALONG IN THE TRINITY  
21 CAMBRIDGE DEVELOPMENT PROCESS, CORRECT?  
22 A. CORRECT.  
23 Q. AND THE SUBJECT OF THIS IS, "PROJECT TRINITY  
24 STATUS REPORT."  
25 DO YOU SEE THAT?  
26 A. YES. THAT'S HOW THEY WERE DOING IT AT THAT  
27 TIME.  
28 Q. OKAY. SO TIME HAS MOVED ON, MORE WORK HAS BEEN  
5443  
1 DONE ON THE TRINITY/CAMBRIDGE.  
2 I WANT TO DIRECT YOUR ATTENTION TO THIS  
3 PARAGRAPH (READING):  
4  
5 "A PRODUCT DECISION HAS BEEN  
6 MADE ON THE 83-MILLIMETER BOX PRODUCT."  
7  
8 THAT'S THE SAME 83-MILLIMETER BOX THAT WE WERE  
9 TALKING ABOUT WHERE THE GOAL WAS TO GET TO 0.0?  
10 A. RIGHT.  
11 Q. OKAY. (READING:)  
12  
13 "IT WILL BE LABELED AS  
14 DELIVERING 0.1 MILLIGRAMS OF FTC TAR. AS OUR  
15 CURRENT MODEL SAFELY MEETS THIS CRITERIA, NO  
16 FURTHER DEVELOPMENT WORK WILL BE NEEDED."  
17  
18 WHAT DOES THAT MEAN?  
19 A. THAT MEANS THAT IT ACHIEVED THEIR GOAL OF  
20 GETTING BELOW THE CAMBRIDGE, AND WHEN THEY MEASURED IT AS  
21 ACCURATELY AS THEY COULD, THEY GOT LESS THAN A TENTH OF A  
22 MILLIGRAM.  
23 Q. WAS THE TRINITY AT ANY POINT DEVELOPED AS A  
24 0.0 LOW MILLIGRAM -- A SAFE CIGARETTE WITH NO TAR WHATSOEVER?  
25 A. WE WERE NEVER ABLE TO MAKE A 0.0-MILLIGRAM  
26 CIGARETTE.  
27 Q. WHEN IT WENT ON THE MARKET, DID IT GO ON THE  
28 MARKET AS TO 0.1 MILLIGRAMS?  
5444  
1 A. YES, IT DID.  
2 Q. IT WAS A LOW DELIVERY CIGARETTE?  
3 A. VERY LOW.  
4 Q. HOPEFULLY, A RISK-REDUCING PRODUCT, BUT NOT A  
5 TASTY CIGARETTE?  
6 A. CORRECT.  
7 Q. IT DIDN'T DO VERY WELL IN THE MARKETPLACE?  
8 A. NO.  
9 Q. CAMBRIDGE PRODUCT -- IN LATER YEARS, WAS THE  
10 CAMBRIDGE BRAND FAMILY REORGANIZED AND RESTRUCTURED?  
11 A. YES, IT WAS.  
12 Q. AND FIRST OF ALL, WHAT'S A BRAND FAMILY.  
13 A. I GUESS WE USE MARLBORO OR CAMBRIDGE OR  
14 WHATEVER -- USE MARLBORO AS THE EXAMPLE.  
15 WITHIN THE MARLBORO FAMILY, YOU HAVE THE  
16 MARLBORO REDS, THE MARLBORO LIGHTS, THE MARLBORO MEDIUMS,  
17 MARLBORO ULTRALIGHTS; YOU WOULD HAVE MENTHOL MARLBOROS, YOU'D

18 HAVE MARLBOROS AT 100 MILLIMETERS LONG. SO ALL THESE  
19 VARIOUS STYLES OF MARLBORO, IF YOU WILL, WOULD BE PART OF THE  
20 MARLBORO FAMILY, BRAND FAMILY. AND CAMBRIDGE HAD IN THE  
21 '80'S, THE EARLY '80'S, '80 TO '86, HAD THREE CIGARETTES IN  
22 ITS BRAND FAMILY.

23 Q. NOW, WE TALKED A LITTLE BIT ABOUT THE LOWEST  
24 TAR OF THE CAMBRIDGE, IT WAS THE .1-MILLIGRAM TAR CAMBRIDGE.  
25 LATER ON, DID PHILIP MORRIS INTRODUCE A HIGHER  
26 TAR VERSION OF THE CAMBRIDGE?

27 A. WELL, WE INTRODUCED THREE TO START OFF WITH,  
28 .1, 1 AND 4 TO 5.

5445

1 Q. AND WHAT HAPPENED IN SUBSEQUENT YEARS?  
2 WERE OTHER VERSIONS OF THE CAMBRIDGE FAMILY  
3 INTRODUCED?

4 A. YES. WHAT HAPPENED IN ABOUT '86 -- AND I THINK  
5 THE CHANGE ACTUALLY OCCURRED IN '87 -- WAS THAT THE BRAND OF  
6 GENERICS, THE LOW-PRICED CIGARETTES, WERE BEGINNING TO TAKE  
7 OVER A LARGE PORTION OF THE MARKETPLACE. AND I'M NOT A  
8 MARKETER OR WHATEVER, BUT ONE OF THE CHARGES WE HAD WAS TO  
9 REDESIGN SOME MORE CIGARETTES.

10 SO THE WHOLE CAMBRIDGE FAMILY WAS CHANGED.  
11 PACKAGING WAS CHANGED. AS I UNDERSTAND, THE ADVERTISING WAS  
12 CHANGED. THE CIGARETTES WERE COMPLETELY CHANGED. AND IN  
13 1987, IT CAME OUT AS A BRANDED GENERIC PRODUCT, A PRODUCT  
14 THAT WAS LOWER IN PRICE THAT COULD COMPETE WITH THE BRAND AND  
15 GENERIC PRODUCTS FROM OUR COMPETITORS, SUCH AS DORAL AND  
16 OTHERS.

17 Q. WAS THE PLAN AT PHILIP MORRIS TO GET SMOKERS TO  
18 START WITH THE .1-MILLIGRAM CAMBRIDGE AND THEN IF THEY WERE  
19 COMFORTABLE SMOKING THAT, TO SWITCH UP TO THE HIGHER TAR  
20 DELIVERY BRAND?

21 A. NO. IT DOESN'T MAKE SENSE.

22 Q. WHY DOESN'T IT MAKE SENSE?

23 A. AS I SAID BEFORE, TAR EQUATES TO TASTE, TO SOME  
24 EXTENT. AND ANYBODY THAT WAS SMOKING A TENTH OF A MILLIGRAM  
25 CIGARETTE OR A 1-MILLIGRAM CIGARETTE, EVEN SMOKING A  
26 16-MILLIGRAM CIGARETTE OR HIGHER, WOULD SEE A VERY, VERY  
27 OBVIOUS DIFFERENCE.

28 Q. SO SOMEBODY WHO HAD BEEN SMOKING A .1 MILLIGRAM

5446

1 TAR CIGARETTE, IF THEY SWITCHED TO A 17-MILLIGRAM TAR  
2 CIGARETTE, WOULD NOTICE A BIG DIFFERENCE RIGHT AWAY --

3 A. YES, THEY WOULD.

4 Q. -- IN TASTE?

5 A. YES. TASTE. HARSHNESS.

6 Q. HARSHNESS, IRRITATION?

7 A. RIGHT.

8 Q. I WANT TO MOVE ON TO A DIFFERENT SUBJECT. A  
9 SLIGHTLY DIFFERENT SUBJECT.

10 SO FAR, WE'VE BEEN TALKING ABOUT GENERAL  
11 REDUCTION, RIGHT?

12 A. RIGHT.

13 Q. AND GENERAL REDUCTION IS A WAY TO REDUCE ALL OF  
14 THE TAR DELIVERY TO A SMOKER, CORRECT?

15 A. CORRECT. ALL OF THE CONSTITUENTS.

16 Q. ALL THE CONSTITUENTS.

17 A. RIGHT.

18 Q. EVERYTHING IN THERE, IF YOU GIVE THE SMOKER  
19 LESS, HOPEFULLY, YOU'RE REDUCING SOME OF THE HARM ASSOCIATED  
20 WITH SMOKING, RIGHT?

21 A. I'M NOT A TOXICOLOGIST, BUT THAT'S MY  
22 UNDERSTANDING, YES.

23 Q. OKAY. AND THAT'S THE GOAL BEHIND THOSE VARIOUS  
24 TECHNIQUES THAT WE'VE BEEN DISCUSSING?

25 A. THAT'S CORRECT, YES.

26 Q. OKAY. WHAT ABOUT EFFORTS TO IDENTIFY AND TO  
27 REMOVE SPECIFIC CHEMICALS, SPECIFIC CONSTITUENTS IN SMOKE  
28 THAT HAVE NOT BEEN IDENTIFIED AS DANGEROUS?

5447

1 HAS PHILIP MORRIS BEEN ENGAGED IN THAT KIND OF  
2 WORK?

3 A. YES, WE HAVE.

4 Q. AND CAN YOU TELL THE JURY, PROBABLY IN BETTER  
5 WORDS THAT I CAN, WHAT YOU MEAN BY SELECTIVE REDUCTION?

6 A. WELL, SELECTIVE REDUCTION IS GOING AFTER, IF  
7 YOU WILL, A TARGETED COMPOUND. I TALKED BRIEFLY BEFORE --  
8 MAYBE, REMEMBER, I WAS TALKING ABOUT THE CELLULOSE ACETATE  
9 FILTERS. THAT TRIACETIN, WHICH IS THE PLASTICIZER THAT HELPS  
10 HOLD THOSE LITTLE FIBERS TOGETHER, IS VERY EFFECTIVE AT  
11 REMOVAL OF PHENOLS. SO PHENOLS ARE SELECTIVELY REMOVED FROM  
12 THE SMOKE STREAM TO A GREAT EXTENT.

13 PHENOL, IT TURNS OUT, IS IN THE VAPOR STAGE OF  
14 SMOKE RATHER THAN THE PARTICULATE PHASES OF SMOKE, SO PHENOL  
15 IS MUCH EASIER TO REMOVE THAN A CONSTITUENT THAT WOULD BE IN  
16 THE LIQUID PORTION OR THE PARTICLE PORTION OF THE SMOKE.  
17 IF IT'S IN THAT LIQUID PORTION, IT'S THERE WITH  
18 4,000 OTHER COMPOUNDS AND TRYING TO REMOVE ONE COMPOUND OUT  
19 OF THAT TAR IS EXTREMELY DIFFICULT TO DO.

20 Q. AND SO WHEN YOU WERE DESCRIBING THE FILTERS,  
21 THAT WAS, IN THE PART YOU'VE JUST DESCRIBED, ONE EFFORT TO  
22 REDUCE ONE COMPONENT, WHICH IS PHENOLS, CORRECT?

23 A. RIGHT.

24 Q. HAS PHILIP MORRIS OVER THE YEARS ENGAGED IN  
25 OTHER EFFORTS TO TRY TO REMOVE SPECIFIC CONSTITUENTS FROM  
26 TOBACCO SMOKE OR FROM THE VAPOR PHASE?

27 A. YES, WE HAVE, AND I'M STILL WORKING ON THAT AS  
28 A MATTER OF FACT.

5448

1 Q. AND DID THOSE EFFORTS BEGIN, TO YOUR KNOWLEDGE,  
2 BEFORE YOU GOT THERE IN 1972?

3 A. THEY DID.

4 Q. AND THEY CONTINUE NOW?

5 A. YES.

6 Q. SOME BEEN SUCCESSFUL, SOME NOT SUCCESSFUL?

7 A. THAT'S CORRECT.

8 Q. FIRST OF ALL, HOW DOES PHILIP MORRIS IDENTIFY  
9 WHICH CONSTITUENTS -- WHICH SPECIFIC COMPONENTS OF THE SMOKE  
10 TO TRY TO GET OUT?

11 A. WELL, MEMBERS OF THE PUBLIC HEALTH COMMUNITY  
12 HAVE IDENTIFIED MATERIALS THAT WOULD BE BEST NOT IN SMOKE, AS  
13 WELL AS TOXICOLOGISTS WITHIN PHILIP MORRIS IDENTIFYING THOSE  
14 CONSTITUENTS.

15 AND WHAT WE TRY TO DO AS CIGARETTE DESIGNERS IS  
16 TRY TO ACCOMPLISH THAT WITH WHATEVER TECHNIQUE WE CAN FIND.  
17 SO THE PUBLIC HEALTH COMMUNITY AT VARIOUS TIMES HAS  
18 IDENTIFIED SPECIFIC COMPONENTS.

19 Q. AND THEN YOUR JOB HAS BEEN TO TRY GET THEM OUT?

20 A. YES.

21 Q. PHILIP MORRIS SCIENTISTS ALSO TRY TO DO  
22 RESEARCH TO TRY TO IDENTIFY WHICH CONSTITUENTS YOU SHOULD TRY  
23 TO GET OUT?

24 A. YES, WE DO.

25 Q. AND YOU DESCRIBED PHENOLS A LITTLE BIT.

26 COULD YOU GIVE THE JURY A COUPLE OTHER EXAMPLES  
27 OF SPECIFIC CONSTITUENTS THAT PHILIP MORRIS HAS WORKED ON?

28 WHAT ABOUT BENZO(A)PYRENE?

5449

1 A. BENZO(A)PYRENE, OR POLYCYCLIC HYDROCARBONS, AND  
2 THE FAMILY OF COMPOUNDS THAT THE PUBLIC HEALTH COMMUNITY, AS  
3 WELL AS OUR INTERNAL TOXICOLOGISTS, HAVE SAID SHOULD NOT BE  
4 IN CIGARETTE SMOKE, WE SHOULD TRY OUR BEST TO GET THOSE OUT.  
5 WE'VE TRIED THAT OVER THE YEARS.

6 AS IT TURNS OUT, THE ONLY WAY WE'VE BEEN ABLE  
7 TO REDUCE THAT IS THROUGH THE GENERAL REDUCTION TECHNIQUE,  
8 NOT THROUGH SPECIFIC REDUCTION. WE'VE NOT FOUND ANY  
9 TECHNIQUE OR TECHNOLOGY OR ANY MODIFICATION TO OUR CIGARETTE  
10 OR TOBACCO THAT WILL REDUCE THE POLYCYCLIC AROMATIC  
11 HYDROCARBONS, AND BENZOPYRENE BEING ONE OF THOSE.

12 Q. HAS PHILIP MORRIS BEEN SUCCESSFUL IN REDUCING  
13 OR ELIMINATING BENZOPYRENE OR HAS THAT BEEN ONE OF THE LESS  
14 SUCCESSFUL?

15 A. ONE OF THE LESS SUCCESSFUL. THE ONLY WAY IT'S  
16 REDUCED IS THROUGH THE GENERAL REDUCTION TECHNIQUE, AND IT  
17 WILL REDUCE EVERYTHING.

18 Q. WITHOUT GETTING TECHNICAL, IF YOU CAN EXPLAIN  
19 JUST A LITTLE BIT WHY IT'S SO DIFFICULT, ONCE YOU IDENTIFY  
20 BENZOPYRENE, TO JUST YANK IT OUT OF THERE. IS IT POSSIBLE TO  
21 ANSWER THAT QUESTION WITHOUT GETTING TOO TECHNICAL?

22 A. I'LL GIVE IT A SHOT.

23 Q. OKAY. THANKS.

24 A. A SMOKE PARTICLE IS A PARTICLE MADE UP OF ABOUT  
25 4,000 DIFFERENT THINGS. SOME OF THOSE THINGS IN THERE,  
26 NICOTINE, WATER, AND A FEW OTHERS, ARE PRETTY HIGH  
27 CONCENTRATIONS. BUT SOMETHING LIKE BENZOPYRENE, OR THE  
28 POLYCYCLIC AROMATIC HYDROCARBONS ARE VERY LOW CONCENTRATIONS  
5450

1 IN THIS TARRY PARTICLE.  
2 AND TRYING TO GO IN IN A CONCEIVABLE WAY OF  
3 GETTING ONE MOLECULE OR ONE SPECIFIC MOLECULE OUT OF THAT HAS  
4 BEEN A CHALLENGE THAT NOBODY I KNOW OF HAS BEEN ABLE TO DO.  
5 SO THAT LEAVES YOU WITH TRYING TO FIGURE A WAY  
6 TO GET THE COMPOUNDS THAT ARE IN TOBACCO -- THAT WHEN YOU  
7 BURN TOBACCO, IT GENERATES THE POLYCYCLIC AROMATIC  
8 HYDROCARBONS, AND TAKE THOSE OUT OF TOBACCO.  
9 WELL, AS IT TURNS OUT, PRACTICALLY EVERYTHING  
10 YOU BURN, CELLULOSE, PURE CELLULOSE, WHETHER TOBACCO, WOOD OR  
11 WHATEVER, GENERATES POLYCYCLIC HIGH DROCARBONS, SO IT'S A REAL  
12 VERY, VERY DIFFICULT PROBLEM THAT WE HAVE NOT YET BEEN ABLE  
13 TO SOLVE. WE ARE STILL WORKING ON IT.

14 AND AS TIME GOES ON, WITH PEOPLE THINKING ABOUT  
15 WAYS, PERHAPS, TO MODIFY THE TOBACCO OR MODIFY THE CIGARETTE,  
16 NEW TECHNIQUES MAY COME ALONG, AND IF THEY DO, WE'LL USE  
17 THEM.

18 Q. SO TRYING TO REMOVE SPECIFIC CONSTITUENTS OUT  
19 HAS SOMETIMES PROVED MORE DIFFICULT.  
20 AND, OBVIOUSLY, AS YOU SIT HERE TODAY, CAN YOU  
21 IDENTIFY THE CONSTITUENTS IN CIGARETTE SMOKE THAT EITHER  
22 ALONE OR IN COMBINATION ARE RESPONSIBLE FOR CAUSING DISEASE?

23 A. NO, I CAN'T, NOR DO I BELIEVE ANYBODY ELSE CAN.

24 Q. SO THE GOAL OF SPECIFIC REDUCTION, THEN, IS TO  
25 DO WHAT?

26 A. SPECIFIC REDUCTION IS TO REMOVE THOSE HARMFUL  
27 CONSTITUENTS THAT PEOPLE HAVE IDENTIFIED AS BEING HARMFUL AND  
28 THINGS THAT SHOULD NOT BE IN THERE AND THINGS WE SHOULD TAKE  
5451

1 OUT.

2 Q. AND THAT'S ONE OF THE EFFORTS THAT  
3 PHILIP MORRIS HAS UNDERTAKEN FOR DECADES?

4 A. YES. AND AS SAID BEFORE, WE'RE STILL WORKING  
5 ON IT.

6 Q. I WANT TO TURN TO ANOTHER KIND OF SPECIFIC  
7 REDUCTION, WHICH IS TAKING NICOTINE OUT OF THE CIGARETTES.  
8 ARE YOU AWARE OR ARE YOU FAMILIAR WITH  
9 PHILIP MORRIS' EFFORTS TO REMOVE NICOTINE FROM CIGARETTES?

10 A. YES, I AM. I WAS VERY INVOLVED IN THAT PROJECT  
11 QUITE A BIT.

12 Q. THE BEGINNING OF YOUR TESTIMONY WHEN YOU WERE  
13 TALKING ABOUT THE VARIOUS JOBS YOU'VE HAD AT PHILIP MORRIS,  
14 YOU MENTIONED THAT YOU WERE INVOLVED IN THE DENIC PROJECT?

15 A. RIGHT.

16 Q. WHAT IS DENIC?

17 A. WELL, IT WAS -- DENICOTINIZATION OF TOBACCO IS  
18 A PROCESS THAT WE TRIED TO DEVELOP AND DID DEVELOP TO REMOVE  
19 NICOTINE FROM TOBACCO SO THAT THE SMOKE FROM THAT TOBACCO  
20 WOULDN'T HAVE ANY NICOTINE IN IT. THE PROCESS THAT WE USE  
21 MORE RECENTLY WAS OR IS A PROCESS THAT'S EXTREMELY SIMILAR TO  
22 THE WAY PEOPLE REMOVE CAFFEINE FROM COFFEE.

23 Q. AND I WANT TO TALK IN SOME DETAIL ABOUT THAT  
24 PROCESS.

25 HAS PHILIP MORRIS EVER MARKETING A CIGARETTE  
26 WITHOUT NICOTINE?

27 A. WE'VE MARKETING A CIGARETTE WITH VERY LOW  
28 NICOTINE.

5452

1 Q. ABOUT HOW MUCH --

2 A. 97 PERCENT REDUCED.

3 Q. 97 PERCENT REDUCED.

4 PHILIP MORRIS HAS MARKETING PRODUCTS WITH  
5 97 PERCENT OF THE NICOTINE TAKEN OUT?

6 A. YES.

7 Q. WHICH WAS THE MOST YOU COULD GET OUT?

8 A. THE MOST OUR PROCESS WOULD GET OUT, THAT'S  
9 CORRECT.

10 Q. AND WHAT WERE THE PRODUCTS CALLED?

11 A. THERE WAS ONE CALLED NEXT, I BELIEVE. THERE  
12 WAS A PRODUCT IN THE BENSON & HEDGES FAMILY. AND I BELIEVE  
13 THERE WAS A PRODUCT IN THE MERIT FAMILY.

14 Q. WHICH WERE ESSENTIALLY NICOTINE FREE?

15 A. 97 PERCENT REDUCED, YES.

16 Q. AND WHEN WERE THESE PRODUCTS FIRST MARKETING?

17 A. THEY WERE MARKETING SOMETIME IN THE MID -- MID  
18 '90'S, I BELIEVE, OR EARLY -- YEAH. IT WAS EARLY '90'S,  
19 I GUESS.

20 Q. LATE 80'S, EARLY '90'S?

21 A. YES.

22 Q. WHEN IS THE FIRST TIME THAT PHILIP MORRIS BEGAN  
23 TO WORK ON TECHNOLOGY TO TRY TO CREATE A CIGARETTE WITHOUT  
24 ANY NICOTINE IN IT?

25 A. THEY WERE WORKING ON TECHNOLOGY TO DO THAT LONG  
26 BEFORE I WENT TO PHILIP MORRIS.

27 Q. OKAY. AND WE HAVE A DEMONSTRATIVE, WHICH TALKS  
28 ABOUT SOME OF THOSE EARLY EFFORTS. AND I'M TRYING VERY HARD  
5453

1 TO USE THE WORD DENICOTINIZED BECAUSE I HAVE A GREAT DEAL OF  
2 DIFFICULTY WITH IT.

3 LET'S PUT UP EXHIBIT 7, WHICH IS DEMONSTRATIVE  
4 11,101.

5

6 (I.D. 11101 - DEMONSTRATIVE)

7

8 Q. BY MR. LEITER: CAN YOU SEE THAT?

9 A. YES.  
10 Q. WHAT DOES IT SHOW?  
11 A. WHAT IT SHOWS IS PHILIP MORRIS' EFFORTS TO  
12 DEVELOP PROCESSES OR TECHNIQUES FOR REMOVING NICOTINE FROM  
13 TOBACCO.  
14 Q. AND PHILIP MORRIS TRIED TO DEVELOP THAT  
15 TECHNOLOGY GOING BACK, IT LOOKS LIKE, TO THE EARLY 1960'S?  
16 A. THAT'S CORRECT, YES.  
17 Q. AND IF YOU COULD DESCRIBE BRIEFLY AND,  
18 HOPEFULLY, NOT TOO TECHNICALLY, THOSE EARLY EFFORTS?  
19 A. THE EARLIEST EFFORT WAS THE USE OF SOLVENT  
20 EXTRACTION. AND THE CONCEPT THAT WAS USED THERE IS SOMETHING  
21 CALLED METHYL ETHYL KETONE. IT'S AN ORGANIC SOLVENT  
22 THAT'S -- NICOTINE IS EXTREMELY SOLUBLE, AND METHYL ETHYL  
23 KETONE IS -- METHYL ETHYL KETONE AT THE TIME WAS USED TO  
24 REMOVE CAFFEINE FROM COFFEE.  
25 SO THE THOUGHT WAS, WE'LL USE METHYL ETHYL  
26 KETONE TO REMOVE NICOTINE FROM THE TOBACCO, AND THEN YOU  
27 HAVE, AFTER THAT PROCESS, THEN YOU'VE GOT TO HEAT THE TOBACCO  
28 TO DRIVE OFF THE METHYL ETHYL KETONE BECAUSE IT'S SOMETHING  
5454  
1 THAT YOU DON'T WANT IN A CIGARETTE.  
2 WELL, AS IT TURNS OUT, WE COULDN'T GET IT ALL  
3 OFF. BUT IN THE COFFEE PROCESS, THEY CAN GET IT ALL OFF,  
4 BECAUSE AS YOU CAN -- COFFEE'S ROASTED AFTER IT'S IN A GREEN  
5 STATE, SO YOU MAKE -- YOU PUT IT IN A ROASTER AND IT GETS  
6 REAL HOT AND DRIVES IT OFF. BUT IF DO THAT TO TOBACCO, IT  
7 WASTES THE TOBACCO. IT'S NO GOOD. IT DRIVES OFF A LOT OF  
8 THINGS OTHER THAN JUST THE METHYL ETHYL KETONE. ALL THE  
9 TASTE IS GONE.  
10 THE NEXT TECHNIQUE THAT THEY USED -- AND I WAS  
11 TO SOME EXTENT INVOLVED IN THIS -- WAS SOMETHING CALLED  
12 AMMONIATION AND STEAM STRIPPING. TOBACCO WAS TREATED WITH  
13 AMMONIA, AND THEN LIVE STEAM WAS PASSED THROUGH THE TOBACCO  
14 TO DRIVE THE NICOTINE OFF.  
15 SO THAT WOULD, HOPEFULLY, PRODUCE A TOBACCO  
16 THAT WOULD BE VERY LOW IN NICOTINE AND HAVE NO RESIDUAL  
17 ORGANIC SOLVENT. YOU ALSO DRIVE THE AMMONIA OFF, SO IT WILL  
18 ALL GO OFF IN THE STREAM.  
19 THE BEST WE COULD DO TO THIS WAS, AGAIN, TO  
20 DESTROY THE TOBACCO. WE ENDED UP WITH MUD, BASICALLY,  
21 BECAUSE IT JUST TORE IT APART. AND WE WEREN'T ABLE TO MAKE  
22 TOBACCO THAT WAS GOOD ENOUGH TO PUT INTO A CIGARETTE TO  
23 EVALUATE IT.  
24 Q. NOW, THE PROCESS -- THE SOLVENT EXTRACTION  
25 PROCESS IN THE EARLY 1960'S AND THE AMMONIATION AND  
26 STEAM STRIPPING PROCESS OF THE LATE 1970'S DIDN'T WORK,  
27 RIGHT?  
28 A. THAT'S RIGHT, IT DID NOT WORK.  
5455  
1 Q. NOW, YOU TALKED -- WHEN YOU WERE TALKING ABOUT  
2 THE EARLY 1960'S PROCESS, YOU MADE AN ANALOGY TO TAKING THE  
3 CAFFEINE OUT OF COFFEE.  
4 DO YOU REMEMBER THAT?  
5 A. RIGHT.  
6 Q. IN THE 1980'S, THE MID 1980'S, DID  
7 PHILIP MORRIS HAVE THE GOOD FORTUNE OF LEARNING MORE ABOUT  
8 THE TECHNOLOGY OF TAKING CAFFEINE OUT OF COFFEE?  
9 A. YES, WE DID.  
10 Q. OKAY. WHAT IT MIGHT BE HELPFUL TO DO IS, I  
11 THINK WE HAVE ANOTHER TIME LINE WHICH TALKS IN MORE DETAIL  
12 ABOUT THE MID 1980'S LEADING UP TO THE SUPERCRITICAL  
13 EXTRACTION PROCESS.

14 AND LET'S MARK THIS AS 11102 --  
15 THE CLERK: -2.  
16 MR. LEITER: THANK YOU.  
17  
18 (I.D. 11102 - DEMONSTRATIVE)  
19  
20 Q. BY MR. LEITER: DR. WHIDBY, IF YOU DON'T MIND,  
21 WOULD YOU MIND COMING DOWN --  
22 A. I'D LOVE TO.  
23 Q. -- AND TAKE US THROUGH THE TIME LINE.  
24 YOU CAN TAKE THAT DOWN. THANK YOU.  
25 A. IN THE FALL OF '85, PHILIP MORRIS BOUGHT  
26 GENERAL FOODS, THE FOOD COMPANY. AND AS IT TURNS OUT,  
27 GENERAL FOODS HAD AT THE TIME, OR STILL DOES, KRAFT, AT THIS  
28 TIME, HAS A PRODUCT CALLED SANKA. AND SANKA IS A  
5456  
1 DECAFFEINATED COFFEE THAT THEY HAD DEVELOPED A TECHNOLOGY FOR  
2 REMOVING THE CAFFEINE USING A PROCESS CALLED SUPERCRITICAL  
3 FLUID EXTRACTION, SUPERCRITICAL CARBON DIOXIDE FLUID  
4 EXTRACTION.  
5 THE BEAUTY OF THAT IS, SUPERCRITICAL CARBON  
6 DIOXIDE, WHEN IT'S SUPERCRITICAL, ACTS LIKE AN ORGANIC  
7 SOLVENT, LIKE THE METHYL ETHYL KETONE WE TALKED ABOUT BEFORE.  
8 THE NICOTINE'S EXTREMELY SOLUBLE IN THAT, BUT WHEN YOU  
9 RELEASE THE PRESSURE, BRING IT BACK TO ROOM TEMPERATURE AND  
10 ROOM PRESSURES, ALL THE CARBON DIOXIDE'S GONE.  
11 SO THAT SOUNDED TO US LIKE IT WOULD BE THE  
12 IDEAL PROCESS FOR REMOVING NICOTINE FROM THE TOBACCO.  
13 SO RIGHT AFTER WE ACQUIRED GENERAL FOODS --  
14 GENERAL FOODS HAD A LABORATORY IN TERRYTOWN, NEW YORK. WE  
15 IMMEDIATELY WENT THERE WITH SOME TOBACCO, SET UP IN THEIR  
16 PILOT FACILITY.  
17 Q. IN THE GENERAL FOODS LABS?  
18 A. IN THE GENERAL FOODS LABS' PILOT FACILITY WITH  
19 SOME TOBACCO AND ATTEMPTED TO REMOVE THE NICOTINE FROM THE  
20 TOBACCO.  
21 WHAT WE FOUND -- IT WAS NOT COMPLETELY EASY TO  
22 DO, BUT IT WAS EXTREMELY PROMISING. TOBACCO WAS -- WE GOT  
23 PROBABLY 70 OR 80 PERCENT OF THE NICOTINE OUT IN A SINGLE  
24 PASS THROUGH THE UNIT. SO WE WERE EXTREMELY ENCOURAGED WITH  
25 THAT PROCESS.  
26 Q. AND I SEE FROM YOUR TIME LINE, THIS IS ABOUT AT  
27 THE END OF 1985?  
28 A. YES. IT WAS A FEW MONTHS AFTER THE ACQUISITION  
5457  
1 OF GENERAL FOODS.  
2 Q. WHAT HAPPENED NEXT?  
3 A. THE NEXT THING WE DID WAS, SINCE WE GOT REAL  
4 PROMISING RESULTS IN TERRYTOWN -- GENERAL FOODS OWNED A  
5 FACILITY -- WELL, BACKUP FOR A SECOND.  
6 THE PILOT -- THE FACILITY IN TERRYTOWN WAS NOT  
7 BIG ENOUGH TO MAKE ENOUGH TOBACCO THAT WE COULD GET  
8 CIGARETTES OUT OF IT AND EVALUATE THAT SUBJECTIVELY, OR TO  
9 SMOKE IT AND SEE HOW IT TASTES. BUT THEY DID HAVE A FACILITY  
10 IN BREMEN, GERMANY WHERE THEY MAKE AN EQUIVALENT PRODUCT  
11 CALLED KAFFEE HAG, WHICH IS LIKE SANKA, BUT IT'S SOLD IN  
12 EUROPE AND MADE WITH THE SAME TECHNOLOGY.  
13 SO WE WENT WITH TOBACCO TO BREMEN, GERMANY,  
14 USED THEIR PILOT FACILITIES, WHICH ARE BIGGER EXTRACTORS, TO  
15 BE ABLE TO MAKE ENOUGH TOBACCO THAT WE COULD BRING BACK AND  
16 SUBJECTIVELY EVALUATE IT. WE DID THAT. AND THE FIRST  
17 INFORMATION WE GOT FROM THE TOBACCO WAS, HEY, IT'S EXTRACTING  
18 IT REAL WELL, AND THE CIGARETTES DON'T TASTE ALL THAT BAD.



19 THEY TASTE PRETTY DARN GOOD, RELATIVE TO ALL THE OTHER STUFF  
20 WE HAD DONE BEFORE.  
21 SO WITHIN A YEAR'S PERIOD OF TIME HERE, WE  
22 BUILT A PLANT IN ROME, CLOSE TO RICHMOND.  
23 Q. LET ME STOP YOU THERE FOR JUST A SECOND.  
24 PHILIP MORRIS SCIENTISTS GOT TOGETHER WITH THE  
25 GENERAL FOOD SCIENTISTS TO THE SEE IF THE TECHNOLOGY WORKED  
26 FOR REMOVING CAFFEINE FROM COFFEE BEANS MIGHT WORK FOR  
27 REMOVING NICOTINE FROM CIGARETTES --  
28 A. CORRECT.

5458

1 Q. -- CORRECT?  
2 A. CORRECT.  
3 Q. AND IT LOOKED PROMISING?  
4 A. LOOKED REAL PROMISING, YES.  
5 Q. THE SCIENTISTS WENT OFF TO GERMANY BECAUSE  
6 THERE WERE BETTER FACILITIES AT THE TIME --  
7 A. BIGGER FACILITIES.  
8 Q. BIGGER FACILITIES?  
9 A. RIGHT.  
10 Q. STILL LOOKED PROMISING?  
11 A. YES.  
12 Q. AND WHAT DID PHILIP MORRIS DO AT THIS POINT?  
13 A. WELL, WE IMMEDIATELY STARTED WORK ON A PILOT  
14 PLANT FACILITY RIGHT SOUTH OF RICHMOND, RIGHT SOUTH OF OUR  
15 R&D AND MANUFACTURING FACILITIES. SO IT WAS CLOSE AT HAND.  
16 SO WE COULD MAKE OUR TOBACCO RIGHT CLOSE TO WHERE WE WERE  
17 RATHER THAN HAVE TO SHIP THE TOBACCO BACK AND FORTH BETWEEN  
18 BREMAN AND RICHMOND.  
19 Q. SO A PILOT PLANT HELPS YOU EVALUATE AND DEVELOP  
20 THE TECHNOLOGY, RIGHT?  
21 A. THAT'S RIGHT. THAT'S RIGHT.  
22 Q. OKAY. WHAT HAPPENED NEXT?  
23 A. WE CONTINUED TO GET EXTREMELY GOOD RESULTS OUT  
24 OF THE PILOT PLANT. SO WE STARTED, AGAIN ALMOST,  
25 CONSTRUCTION OF A FULL-SCALE FACTORY TO DO THE EXTRACTION OF  
26 THE TOBACCO. AND THAT FACTORY WAS OPENED IN THE EARLY PART  
27 OF '89 AFTER CONSTRUCTION BEGINNING IN THE FALL OF '87. IT  
28 IS A HUGE FACILITY, AND IT WAS BUILT UNDER THE FASTEST TRACK  
5459

1 PROCESS THAT WE COULD MUSTER.  
2 Q. SO PHILIP MORRIS AT THIS POINT DECIDED TO BUILD  
3 A COMMERCIAL FACTORY, SOMETHING TO ACTUALLY MAKE AND SELL THE  
4 PRODUCTS --  
5 A. YES.  
6 Q. -- IN THE MARKETPLACE?  
7 A. CORRECT.  
8 Q. IS THAT CORRECT?  
9 A. THAT IS CORRECT.  
10 Q. PRESUMABLY, THE COMPANY BELIEVED THAT THIS WAS  
11 A VERY PROMISING TECHNOLOGY?  
12 A. YES.  
13 Q. WHY WAS A WHOLE NEW PLANT NECESSARY TO MAKE AND  
14 MARKET CIGARETTES WITHOUT NICOTINE?  
15 A. THE PROCESS WE DEVELOPED FOR REMOVING NICOTINE  
16 FROM TOBACCO, PHILIP MORRIS DIDN'T OWN ANY EQUIPMENT TO DO  
17 THAT IN -- THE EQUIPMENT OR FACTORY TO DO THAT IN. SO WE HAD  
18 TO DESIGN AND BUILD OUR OWN FACTORY TO DO IT WITH.  
19 Q. OKAY. LET'S TAKE A LOOK AT NO. 9, WHICH WE'LL  
20 CALL 11103, WHICH IS ON THE SCREEN BEHIND YOU.  
21  
22 (I.D. 11103 - DEMONSTRATIVE)  
23

24 Q. BY MR. LEITER: WHAT'S THAT?

25 A. THAT IS THE FACILITY, INCLUDING THE PILOT PLANT  
26 FACILITY HERE THAT WAS BUILT EARLY ON AS WE TALKED ABOUT.  
27 AND THIS IS THE MANUFACTURING FACILITY, IF YOU WILL, FOR  
28 DOING THE SUPERCRITICAL EXTRACTION OF TOBACCO.

5460

1 AND SORT OF TO PUT THIS IN PERSPECTIVE, THE  
2 LENGTH OF THIS BUILDING IS THREE FOOTBALL FIELDS LONG.

3 Q. SO I PRESUME YOU HAD A LOT OF CAPACITY TO MAKE  
4 CIGARETTES WITHOUT NICOTINE AND PUTTING THEM OUT ON THE  
5 MARKET?

6 A. YES.

7 Q. WHAT HAPPENED AFTER THAT?

8 A. WE PUT THEM ON THE MARKET.

9 Q. AND YOU MENTIONED THAT THERE WERE THREE BRANDS;  
10 THERE'S NEXT, WHICH YOU SEE IS DEPICTED ON THE TIME LINE?

11 A. RIGHT.

12 Q. THERE WAS ALSO A MERIT VERSION?

13 A. CORRECT.

14 Q. AND A BENSON & HEDGES VERSION?

15 A. CORRECT.

16 Q. CORRECT?

17 A. CORRECT.

18 Q. HOW DID THEY DO?

19 A. INITIALLY, THEY OBSERVED A FAIR AMOUNT OF  
20 TRIAL. PEOPLE BOUGHT THEM, CHECKED THEM OUT. BUT  
21 ULTIMATELY, THEY DIDN'T REPURCHASE ANY OF THEM.

22 Q. AND DID PHILIP MORRIS DEVELOP AN UNDERSTANDING  
23 AS TO WHY PEOPLE BOUGHT THEM AT FIRST BUT THEN DIDN'T COME  
24 BACK TO BUY THEM AGAIN?

25 A. MY UNDERSTANDING IS THAT THEY DIDN'T TASTE  
26 GOOD.

27 Q. WHAT KIND OF COMPLAINTS ABOUT THE TASTE WERE  
28 THERE?

5461

1 A. HAD AN OFF TASTE. I HAVE PERSONAL EXPERIENCE  
2 IN THAT. THEY --

3 Q. YOU WORKED ON THIS PROJECT, RIGHT?

4 A. YES, I DID.

5 Q. DID YOU SMOKE THEM?

6 A. YES.

7 Q. WHAT DID THEY TASTE LIKE?

8 A. WELL, THEY TASTED BETTER THAN ANY OTHER DENIC  
9 CIGARETTES THAT I EVER TASTED, BUT THEY WEREN'T -- THEY  
10 DIDN'T TASTE GOOD AFTER A WHILE. YOU GOT AN OFF TASTE. THEY  
11 JUST -- I REALLY CAN'T DESCRIBE IT. THE DIDN'T TASTE LIKE A  
12 GOOD CIGARETTE.

13 Q. WHAT DID PHILIP MORRIS, DO, IF ANYTHING, TO TRY  
14 TO SOLVE THE TASTE PROBLEM?

15 A. WE PUT OUR BEST PEOPLE -- THE ENTIRE FLAVOR  
16 DEVELOPMENT GROUP WAS TASKED WITH TRYING TO SOLVE THE  
17 PROBLEM; THE FLAVOR DEFICIT WITH THE DENICOTINIZED TOBACCO.  
18 NOW, I CAN'T SAY IT.

19 Q. I TOLD YOU.

20 A. THEY WORKED ON -- THEY WORKED VERY DILIGENTLY  
21 ON IT.

22 WE ALSO, FROM AN EXPERIMENTAL POINT OF VIEW, WE  
23 ADDED NICOTINE BACK TO THAT TOBACCO, THE SAME LEVEL IT WAS  
24 BEFORE WE EXTRACTED IT. AND THE OFF TASTE, THE TASTE  
25 DEFICIT, WAS STILL THERE. IT STILL TASTED BAD. SO NEITHER I  
26 KNOW NOR DO I KNOW ANYONE ELSE WHO KNOWS WHAT'S WRONG WITH  
27 THE FACT, WHY WE COULDN'T MAKE IT TO TASTE GOOD.

28 Q. PHILIP MORRIS TRIED WITH THEIR FLAVOR PEOPLE TO

5462

1 ADD SOME OF THE NICOTINE BACK AND SEE WHAT HAPPENS, RIGHT?

2 A. THAT'S RIGHT.

3 Q. OR AN EXPERIMENTAL BASIS TO ADD MORE OR ALL OF  
4 THE NICOTINE BACK TO SEE WHAT HAPPENED?

5 A. RIGHT.

6 Q. WHEN YOU PUT ALL THE NICOTINE BACK TO SEE WHAT  
7 WOULD HAPPEN, WERE THOSE VERSIONS THAT WERE MARKETED?

8 A. NO.

9 Q. THAT WAS JUST IN THE LAB?

10 A. NONE OF THE VERSIONS THAT WE ADDED ANY NICOTINE  
11 BACK TO WAS EVER MARKETED.

12 Q. DIDN'T SOLVE THE TASTE PROBLEMS?

13 A. NO. IT WAS JUST TO FIND OUT, WAS THAT THE  
14 PROBLEM.

15 Q. HOW LONG DID PHILIP MORRIS KEEP THE NEXT AND  
16 THE MERIT AND BENSON & HEDGES OF NO NICOTINE CIGARETTES OUT  
17 OF THE MARKET?

18 A. ABOUT THREE YEARS.

19 Q. AND I SEE DOWN AT THE BOTTOM OF THAT CHART,  
20 THERE'S THE NOTATION 300 MILLION INVESTED.  
21 WHAT DOES THAT MEAN?

22 A. THAT'S THE AMOUNT OF MONEY PHILIP MORRIS SPENT  
23 ON DEVELOPING THIS PROCESS AND DEVELOPING THIS PRODUCT.

24 Q. NOW, THAT FACTORY THAT'S DEPICTED IN THE CHART  
25 BEHIND YOU THAT'S ON THE SCREEN, WHAT HAPPENED TO IT?

26 A. IT IS STILL SITTING THERE.

27 Q. WHAT DO YOU MEAN, IT'S STILL SITTING THERE?  
28 IS IT USED?

5463

1 A. NO. IT'S NOT DOING ANYTHING. IT'S SITTING  
2 THERE UNUSED IN MOTH BALLS.

3 Q. NOT USED FOR MAKING CONVENTIONAL CIGARETTES?

4 A. NOT USED FOR ANYTHING.

5 Q. LOST MONEY?

6 A. YEP.

7 Q. YOU CAN, I THINK, RETURN TO THE WITNESS STAND.  
8 THANK YOU.

9 AND YOU CAN TURN THAT OFF.

10 DR. WHIDBY, I THINK THE LAST SUBJECT THAT WE'LL  
11 TALK ABOUT THIS AFTERNOON IS, I BELIEVE, ANOTHER VERSION OF  
12 SELECTIVE REDUCTION.

13 ARE YOU FAMILIAR WITH SOMETHING KNOWN AS THE  
14 NOD PROGRAM?

15 A. YES, I AM.

16 Q. AND WHAT'S THE -- NOD IS AN ACRONYM?

17 A. YES. IT STANDS FOR NATURALLY OCCURRING  
18 DENITRIFICATION.

19 Q. AND WHAT WAS THAT PROGRAM?

20 WHAT WAS IT DESIGNED TO DO?

21 A. IT WAS DESIGNED TO TAKE NITRATE OUT OF ONE OF  
22 OUR PROCESSES AND ONE OF OUR PROCESSES FOR MAKING  
23 RECONSTITUTED LEAF.

24 Q. AND HOW WAS IT GOING TO GO ABOUT DOING THAT?

25 A. NATURALLY OCCURRING DENITRIFICATION IS THE  
26 NATURAL OCCURRENCE OF BACTERIA; IN THAT PROCESS, WAS, ON  
27 OCCASION, REMOVING ALL THE NITRATE FROM THE TOBACCO THAT WAS  
28 IN THAT PROCESS.

5464

1 AND THE WAY WE KNEW THAT WAS, ANOTHER PROCESS  
2 OR ANOTHER TECHNIQUE WE HAVE IN THAT PROCESS IS A PROCESS  
3 CALLED CRYSTALLIZATION IN WHICH WE COOL LIQUID. THE NITRATE  
4 CRYSTALS WILL PRECIPITATE OUT, AND WE RUN THOSE THROUGH A

5 CENTRIFUGE AND TAKE THE NITRATE OUT OF THE PROCESS.  
6 ON OCCASION, WE WEREN'T GETTING ANY NITRATE  
7 CRYSTALS OUT OF THE CENTRIFUGE. SO WE STARTED INVESTIGATING  
8 WHAT WAS GOING ON, AND WE FOUND THAT THE BACTERIA -- THE  
9 BACTERIA THAT NATURALLY OCCUR ON TOBACCO WERE, ON OCCASION,  
10 CONSUMING THE NITRATE IN THE LIQUOR, OR IN THE LIQUID. IT  
11 WAS EXTRACTED FROM THE TOBACCO.  
12 SO THE NOD PROJECT WAS AN ATTEMPT TO HARNESS  
13 THAT TO MAKE IN A COMMERCIAL PROCESS OUT OF SOMETHING THAT WE  
14 COULD USE IN THAT FACTORY TO REMOVE ALL THE NITRATE FROM THE  
15 AERIAL, BECAUSE THE CENTRIFUGE PROCESS OR THE CRYSTALLIZATION  
16 PROCESS ONLY REMOVES 60 OR SO OR 70 PERCENT OF THE NITRATE.  
17 Q. SO THE NOD PROGRAM, IF IT WORKED, WOULD HAVE  
18 REMOVED MORE OR ALMOST ALL OF THE NITRATES?  
19 A. YES. WE WERE HOPING FOR VIRTUALLY ALL.  
20 Q. OKAY. AND I TAKE IT FROM YOUR ANSWER THAT  
21 NITRATES ARE ONE OF THE BAD CONSTITUENTS THAT IT WOULD BE  
22 BETTER TO GET OUT OF CIGARETTE SMOKE, IF IT'S POSSIBLE TO DO  
23 THAT?  
24 A. YES. NITRATES LEAD TO THE FORMATION OF OXIDES  
25 OF NITROGEN AS WELL AS A FORMATION OF NITROSAMINES.  
26 Q. WERE YOU INVOLVED IN THE NOD PROGRAM?  
27 A. YES, I WAS.  
28 Q. IN WHAT WAY?

5465

1 A. I WAS THE MANAGER OF THE GROUP THAT WAS  
2 RESPONSIBLE FOR DEVELOPING THE TECHNOLOGY, AND I WORKED WITH  
3 THE GROUP FOR A NUMBER OF YEARS, DAY IN AND DAY OUT,  
4 WEEKENDS.  
5 Q. A LOT OF TIME?  
6 A. YES.  
7 Q. NOW, THE JURY HEARD A LITTLE BIT ABOUT THE NOD  
8 PROGRAM EARLY ON IN THE CASE THROUGH THE DEPOSITION OF  
9 DR. UYDESS.  
10 WHO IS DR. UYDESS?  
11 A. DR. UYDESS IS A SCIENTIST -- WAS A SCIENTIST AT  
12 PHILIP MORRIS. DR. UYDESS WAS IN MY DIVISION. HE WORKED FOR  
13 ME ON THAT PROCESS.  
14 Q. YOU WERE HIS BOSS --  
15 A. YES.  
16 Q. -- IN CONNECTION WITH THE NOD PROCESS?  
17 NOW, WAS THE NOD PROJECT SUCCESSFUL?  
18 A. NO, IT WAS NOT.  
19 Q. AND CAN YOU DESCRIBE FOR US WHY IT WAS NOT  
20 SUCCESSFUL -- IN WHAT WAY IT WASN'T SUCCESSFUL?  
21 A. IN GENERAL TERMS, IT WAS NOT A PROCESS THAT WE  
22 COULD GET UNDER CONTROL. BY THAT, I MEAN, IT WAS NOT A  
23 PROCESS -- IT WAS A MICROBIAL PROCESS. IT WAS NOT A PROCESS  
24 THAT WE COULD USE THE MICROBES, THE BACTERIA, AND START THEM  
25 TO -- IT'S REALLY A FERMENTATION PROCESS -- TO GET THEM TO  
26 START ON DEMAND. SOMETIMES, IT WOULD TAKE A FEW HOURS TO GET  
27 IT STARTED AND SOMETIMES A FEW DAYS TO GET IT STARTED.  
28 OTHER TIMES, THAT PROCESS WOULD LEAD TO

5466

1 MATERIAL COMING OUT THAT HAD VERY BAD OFF ODORS AND VERY BAD  
2 TASTE. SO FROM A PROCESS POINT OF VIEW THAT'S IN THE  
3 FACTORY, YOU HAVE TO HAVE SOMETHING THAT YOU CAN RELY ON,  
4 SOMETHING THAT'S THE SAME THING FROM DAY IN AND DAY OUT USING  
5 ALL THE TECHNIQUES WE HAD.  
6 AND WE CONTRACTED WITH EXTERNAL CONSULTING  
7 FIRMS AS WELL AS GETTING PEOPLE FROM VARIOUS UNIVERSITIES TO  
8 WORK WITH US. WE WERE UNABLE TO SOLVE THAT PROBLEM.  
9 Q. NOW, YOU MENTIONED ONE OF THE PROBLEMS WAS THAT

10 YOU COULDN'T CONTROL IT.  
11 DOES THAT MEAN IT DIDN'T WORK CONSISTENTLY?  
12 A. THAT'S CORRECT.  
13 Q. WHY IS IT IMPORTANT FOR THE PROCESS TO WORK  
14 CONSISTENTLY?  
15 A. WELL, IN A CONSUMER PRODUCT, WE WANT TO HAVE  
16 THE SAME THING TODAY AS YOU HAVE TOMORROW AS YOU HAD  
17 YESTERDAY. YOU DON'T WANT TO HAVE SOMETHING THAT'S VARYING  
18 AROUND ALL OVER THE PLACE THERE.  
19 Q. SO IF YOU CAN'T GET IT TO WORK THE SAME WAY ALL  
20 THE TIME, YOU CAN'T COUNT ON THE PRODUCT WORKING IN  
21 PRODUCTION; IS THAT FAIR?  
22 A. THAT'S RIGHT.  
23 Q. YOU ALSO MENTIONED SOMETHING ABOUT BAD SMELLS?  
24 A. YES.  
25 Q. WHAT DID YOU MEAN BY THAT?  
26 A. VERY BAD SMELLS. THE CHARACTERIZATION THAT  
27 SOME OF THE EXPERTS GAVE IT WERE BARNYARDY GREEN  
28 AND FECAL.  
5467  
1 Q. YOU'RE NOT --  
2 A. THOSE AREN'T GOOD.  
3 Q. YOU'RE NOT AN ADVERTISING GUY, BUT YOUR SENSE  
4 IS THOSE WOULDN'T LOOK GOOD IN ANY AD FOR PRODUCT?  
5 A. SMELLED LIKE A GOAT OCCASIONALLY, TOO.  
6 Q. COULD YOU TELL THE JURY A LITTLE BIT ABOUT  
7 THINGS THAT YOU AND YOUR TEAM AND OTHER PEOPLE AT  
8 PHILIP MORRIS TRIED TO GET IT TO WORK BETTER?  
9 A. WE STARTED OFF THINKING THAT IT WOULD BE A VERY  
10 EASY THING TO DO, SINCE IT WAS OCCURRING NATURALLY IN THE  
11 PROCESS. SO WHAT WE DID WAS TO ORIGINALLY JUST GET SOME BIG  
12 VESSELS, BIG OPEN TANKS, PUT THE LIQUOR OR THE LIQUID, THE  
13 EXTRACT FROM THE TOBACCO, IN THAT, AND PUT IN SOME OF THE  
14 BACTERIA, AND MAKE -- WOULDN'T THAT WORK BECAUSE IT WORKED IN  
15 THE FACTORY.  
16 OCCASIONALLY. AS IT TURNS OUT, IT WORKED  
17 OCCASIONALLY. MOST OF THE TIME, IT DIDN'T. AND SO THAT'S  
18 WHEN WE SAID, MAYBE IF WE START RUNNING THIS LIQUID THROUGH A  
19 FERMENTATION PROCESS, WE'LL STERILIZE IT.  
20 FIRST STEP WAS TO PASTEURIZE IT, BECAUSE IT WAS  
21 EASIER TO GO FROM A NON-CONTROLLED SYSTEM LIKE THAT TO  
22 PASTEURIZATION. SO WE PASTEURIZE IT, AND THAT MEANS IT'S  
23 HEATING UP KILLING MOST OF THE BACTERIA IN IT AND THEN  
24 KEEPING ONLY THE BACTERIA THAT YOU WANT IN THE PROCESS.  
25 WELL, THAT HAD ITS PROBLEMS, ALSO. HARD TO  
26 START, HARD TO BE CONSISTENT AND, AGAIN, ON OCCASION, IT  
27 WOULD PRODUCE MATERIAL THAT WAS NOT GOOD.  
28 THE THIRD PILOT PLANT WE BUILT IS -- WE BUILT  
5468  
1 THREE PILOTS IN THIS PROCESS. THE THIRD WAS COMPLETE  
2 STERILIZATION. WE STERILIZED THE MATERIAL COMPLETELY. WE  
3 ADDED ONLY THE BACTERIA THAT WE WANTED INTO IT AND, AGAIN,  
4 EVEN THAT CONTINUED TO BE UNPREDICTABLE; PRODUCING MATERIAL  
5 SOMETIMES THAT WAS EXTREMELY BAD AND COULD NOT BE USED IN THE  
6 PRODUCT.  
7 Q. ULTIMATELY, DID YOU EVER GET THE PROCESS TO  
8 WORK --  
9 A. NO, WE DID NOT.  
10 Q. -- CONSISTENTLY?  
11 DID THE NOD PROJECT SHUT DOWN PREMATURELY WHEN  
12 PHILIP MORRIS WAS ON THE VERGE OF A BREAKTHROUGH THAT WOULD  
13 IMPROVE THE SAFETY OF PHILIP MORRIS' PRODUCTS?  
14 A. WE DID EVERYTHING THAT WE KNEW HOW TO DO TO

15 MAKE THAT PROCESS WORK. AND WE EXHAUSTED ALL THE IDEAS THAT  
16 WE HAD, THAT OUR CONSULTANTS HAD AND OUR ENGINEERING FIRM HAD  
17 BEFORE IT WAS SHUT DOWN.

18 Q. YOU WORKED HARD ON THAT PROJECT, DIDN'T YOU?

19 A. YES, I DID.

20 Q. DID YOU WANT IT TO SUCCEED?

21 A. YES, I DID.

22 Q. WHEN IT SHUT DOWN, WERE YOU SATISFIED THAT YOU  
23 TRIED EVERYTHING THAT PEOPLE COULD THINK OF?

24 A. YES.

25 Q. DOES PHILIP MORRIS HAVE A PROCESS TODAY WHICH  
26 REMOVES MOST OF THE NITRATES FROM RECONSTITUTED TOBACCO?

27 A. YES.

28 Q. AND WHAT PROCESS IS THAT?

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1 A. THAT'S THE CRYSTALLIZATION PROCESS WE TALKED  
2 ABOUT.

3 MR. LEITER: YOUR HONOR, THIS MIGHT BE A GOOD TIME TO  
4 STOP.

5 THE COURT: VERY WELL. THANK YOU VERY MUCH.

6 LADIES AND GENTLEMEN, JUST TO REMIND YOU, WE'LL  
7 BE STARTING AT 8:45 MONDAY MORNING.

8 ALL RIGHT. WE'LL SEE YOU ALL THEN. HAVE A  
9 GOOD WEEKEND AND GET RESTED.

10 DON'T DISCUSS THIS CASE WITH ANYONE.

11 SIR, YOU MAY STEP DOWN. THANK YOU, SIR.

12

13 (AT 4:00 P.M., AN ADJOURNMENT WAS TAKEN  
14 UNTIL MONDAY, MAY 14, 2001 AT 9:00 A.M.)

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